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# Computer Weekly

Thursday, April 7, 1983

## Thorn brings its buys together

by Robert Parry

THORN-EMI last week brought the bulk of its newly acquired computer interests in house.

It merged its internal computer operation, Corporate Management Services (CMS), with the Datavolve bureau, bought with Software Sciences from BOC a year ago.

CMS becomes an operational division of Datavolve, moving into Thorn-EMI's information technology division, formed at the end of November by combining Software Sciences, Datavolve and Thorn-EMI Datatech. The division is headed by Software Sciences' founder Colin Southgate.

"Datavolve has convinced Thorn-EMI that we are competent," says Datavolve managing director Chris Wood, "and in effect we finish up with the internal Thorn-EMI computing. It

doubles the size of our operation."

CMS employs around 450 people. CMS is the primary computer management team within Thorn-EMI, and looks after the group's internal computing requirements from two primary centres at Westmount, Hayes, and Hoddesdon in Hertfordshire. Westmount is a Honeywell house and Hoddesdon mixed IBM and ICL, though the ICL 2956 there is about to be phased out in favour of another IBM machine, says Wood.

Three other centres, at Spennymoor, Co Durham, Telford and Havant, Hampshire, make up the rest of CMS facilities. Telford presently has an ICL 2900, which will shortly move over to IBM 4341 like the other centres. "It will be six to 12 months till the final phase of the ICL kit," adds Wood.

The advantages for CMS of the combination with Datavolve lie



WOOD...convinced Thorn his company is competent.

## BT gets EEC cash — but Howe snatches it

by Donald Kennaugh

OVER £200 million of the EEC refund won by Prime Minister Margaret Thatcher's protests over the UK's oversized contribution was allocated to telecommunications.

The bulk of the money, 90% of a total refund of £63 million, reached the Treasury last week.

But British Telecom will see little benefit from it, since Chancellor Sir Geoffrey Howe said in last month's UK budget that BT would have its borrowing limit reduced by £166 million.

Instead of being able to borrow an additional £36 million this year, it will have to pay back £100 million of the £3 billion it already has.

A spokesman for the Treasury said that the expectation of receiving the refund had already been taken into account when the expenditure plans for 1982-83 were drawn up and that the trans-

fer of the funds from the EEC merely reimbursed the Treasury for money already spent.

An EEC spokesman said that telecommunications was one of the main areas in which the Commission wanted to encourage investment, but that so far no specific method had been established for doing it.

Meanwhile, the "supplementary measures" under which the refunds were made was a useful channel.

The sums provided in this way were far larger than those provided under other schemes, the regional development fund, for example.

If BT is privatised it will cease to qualify for this type of funding, but the Treasury says it will no longer need it then because it will be free of all constraints on borrowing except the willingness of the lenders and its own ability to legal action.

The main contention is over operating systems developed by Sci-Com's majority stock holder, Science Management Corporation (SMC) based in New Jersey.

According to Colin Turney, a marketing consultant to Marubeni in London, Marubeni has licenses from SMC via Seikosha, the manufacturer of the hardware.

"They have no software whatsoever," counters Davidson.

"Sci-Com and SMC have never been contacted by Marubeni."

The software mentioned is the property of SMC and Sci-Com, not Seikosha.

Davidson is executive vice-president of SMC, as well as president of Sci-Com and on the board of its UK distributor, Synchronised Computer.

## LINE NOISE

PERSISTENT rumours have been doing the rounds that mini maker GEC Computers is out to buy a micro to sell under its own label. US manufacturer Tandy has featured strongly as a likely supplier, with its 5800-based Model 16. But according to a GEC spokesman, the talk started when Tandy offered to buy a GEC mini if GEC could take some Tandy micros in exchange. Anyway, he adds, a GEC subsidiary company, A B Dick in the US, is developing products for GEC Information Systems (the company that embraces GEC Computers) — so there would be no need to go to Tandy or any other outside microcomputer builder.

THE young but fast-growing UK microcomputer manufacturer Future Technology Systems is about to hit the big time in the OEM market. The company moved into that business last year with an order from an office equipment firm called OEM. But it is now getting a big order from a very large computer manufacturer to build systems and make them look just like that company's equipment, right down to the cabinets.

A NICH project is coming up for an architect and programmer in British Telecom. Last week BT signed a £10.5 million order with Swiss firm Lindis and Gyr for carphones. Instead of taking money from these public telephones accept plastic cards which you buy in post offices and telephone boxes. These devices save BT the cost of employing the cash boxes. But BT payphones are even further ahead and the charges straight through to the user's domestic telephone bill. This would involve links between billing computers and the new System X digital network.

AN IBM plug-compatible mainframe running an ICL operating system? Don't be surprised if ICL announces a version of its VME operating system for the British-built Amiga range. It's about time IBM users had an operating system worthy of the name, and it looks as if VME could be it.

**PT7 cuts costs**  
Ferranti Computer Systems Ltd, 100 Grosvenor Road, Manchester M15 4LS, Tel: 061 838 5554

FERRANTI  
Computer Systems

**Computer**  
Computer

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## Four from Hitachi go in lawsuit drama

by John Kavanagh

TWO top executives and two engineers at Hitachi have become the first casualties of IBM's trade secrets lawsuit against the Japanese company.

With settlement of the case due this weekend, computer operations director, Yasukichi Hatao, has been removed from the job, although he remains a company director.

And mainframe factory manager Katsuhiko Nakazawa has been transferred to the general corporate staff.

Two engineers arrested by FBI agents in the US have been moved from the mainframe business to the personal computer factory in Japan.

These moves come six weeks after Hitachi was fined the minimum of \$10,000 after pleading guilty to conspiring to steal confidential design information from IBM on new products — the 303 mainframe and the MVS/XT operating system.

The suit due for settlement this week is a civil action brought by IBM against Hitachi, the US firm which sells its plug-compatible systems + NAS + and NAS parent company, National Semiconductors.

Hitachi pleaded guilty in the first case in exchange for assurances from the US Justice Department that no further charge would be brought in the case.

The plug-compatible company admitted paying over \$300,000 for IBM documents but said it did not know they were stolen.

This compares with almost 700 workers at the other Inmos factory in Colorado Springs in the US.

The year end accounts show that Paul Schroeder, a founding director

of Inmos

and the company intends to convert this loan to equity (shares)

as soon as possible.

No reason has

been given for the delay in converting the loan, but informally the company has indicated that an agreed valuation of Inmos shares has not been arrived at yet.

As announced last autumn, Inmos is continuing the hunt, under the guidance of City of London merchant bank Hill Samuel, for private investors, so far without avail.

■ Full details, page 16-17.

## Loss-maker Inmos loses another £20m

by Kevin Cahill

STATE-OWNED semiconductor manufacturer Inmos lost £20.4 million on sales of £13.7 million in the year ended December 31, 1982.

Chairman Malcolm Wilcox said this week the Inmos could move into profits in 1984, but his claim was qualified by two big "ifs": "if there is real progress out of the world recession, and sales of Inmos products remain in line with our forecasts."

Last year's loss followed a £12.9 million loss in 1981. In the four years the company has been operational it has shown a cumulative deficit of £42.06 million.

Cash in the bank at the end of 1982 was £3.4 million, enough for eight weeks operations at the rate of £10,000 per hour plus overheads.

The remainder of the £20 million loss was made up from an £8.6 million loss on distribution and administration, £4.5 million on R & D, and £3.6 million starting up the factory in Newport, Wales.

Wilcox noted that the company now had almost 300 employees in the UK, with prospects for a further 200 or 300 here this year.

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BARRON, PETRITZ and SCHROEDER... Will Inmos make them happy?

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## IBM software leaves users cold

by Clares Gooding

IBM's large-scale operating system for the future went on general release last week — leaving the majority of users out in the cold.

Industry observers are saying

that customer demand forced IBM

to release MVS/XA before it was

really ready, without the full facil-

ties which users waited to expect.

Still to come is the 4300 DDM/VSE to MVS/XA path

which will bring mid-range users

into line.

The XA (short for Extended

Architecture) extensions were

promised some 18 months ago and

another half-hour to reverse the operation. At \$2,000 an hour in running costs for a 3081 that comes expensive. Installation itself was reported to be straightforward for users of the most recent MVS release SP1.3.3, though likely to be much trickier for those running earlier versions of MVS.

The main reason that large users need MVS/XA in a hurry is to release a vital 1½ Mbytes in the user area of the machine by moving code out of the Common System Areas. This has become overloaded as expanding systems

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## Xerox to marry stores and bureaux

by John Kavanagh  
RANK Xerox is merging its UK business equipment shops and copy bureaux to enable the two operations to grow by feeding off each other. The merger comes as the shops establish themselves after a poor start 18 months ago, when the company misjudged the market.

Meanwhile Rank Xerox has added a 16-bit microcomputer to its 820 range. The new 820 II has both an Intel 8088 processor and a Zilog Z80, so it can run 16-bit and eight-bit programs under Digital Research's CP/M operating systems.

Rank Xerox has sold copy services for over 20 years and has 10% of the UK market through 34 copy bureaux. It has 17 Xerox Stores. Over the next year the copy bureaux will be refitted and come under the Xerox Stores banner.

The 50-old outlets will sell business equipment, while some of the existing stores will get copy service facilities.

Retailing marketing manager Peter Mursden said the UK stores had got off to a slow start because they had followed the US example of concentrating on selling copiers.

"It was soon obvious that UK customers were used to buying from salesmen knocking on the door, so we had to diversify into products which were more suited to the retail market," he said.

"There were no set marketing patterns in the microcomputer business so we made a big shift to this expanding market to take advantage of a huge opportunity."

"We started with our own 820 but found we also needed machines above and below it. So in September we took on the Sinclair ZX81. There was a big domestic



## Automatic Scots are Motorola aim

by Jack Gee  
MOTOROLA plans to open automatic assembly lines for computer components in both France and Scotland next year if a pilot venture of this type is successful in the US, Andre Borrel, general manager for its European semiconductors division announced.

Borrel said: "The only problem would be how investment is shared between the two countries. The Europeans must wake up to this problem. You cannot improvise where automatic manufacture is concerned and the Japanese are way ahead in this field."

The Motorola European chief criticised the French government for failing to make funds available for developing the firm's activities and treating it as an outsider in spite of the existence of its Toulose plant.

Motorola was ready to offer Thomson its H-Mos II technology and a licence for its 64Kbit RAM, Borrel added.

The Motorola European boss expressed satisfaction that the

French government has ended the Eurotechnique joint venture between State-owned Saint Gobain and National Semiconductor in developing and making computer components.

Thomson has now taken over both firms' stakes in Eurotechnique and become the unchallenged leader of France's semiconductor industry.

Borrel said: "We have been working over the past few months that Thomson might take over Eurotechnique. There might then have been a triangular partnership involving National Semiconductor. If that had happened, our technology could have fallen into the hands of our American rival."

Motorola was ready to offer Thomson its H-Mos II technology and a licence for its 64Kbit RAM, Borrel added.

"So Motorola wanted to have National Semiconductor outside Eurotechnique."

**Wabash steps from Curtain**

by John Riley  
A Xerox store . . . soon to be merged with copy bureaux

computing sales rush before Christmas but over the last four or five months we have launched a major microcomputing campaign.

We now offer everything from the Sinclair to Atari, Osborne and other machines up to the Digital Equipment Professional."

Retail manager John Curtis added: "We believe a busy, well-established copy centre will provide an ideal retail site for selected business equipment — and in some cases a suitable sales point for copiers."

According to managing director Jim Robson, the company now supplies 60% of Hungary's magnetic computer media, and has re-

cently appointed a French sales coordinator to push further into France, Spain and Portugal.

With the company claiming to supply 22% of the UK's tape and floppy disk market, the Norway contract for computer tapes completes the ring around Europe.

The company now hopes to set up subsidiary companies in France and then later on in Germany.

Commenting on the Norwegian contract, Robson said: "The geophysical exploration market takes up 20% of all computer tape used worldwide today, so we have been concentrating in this area."

Wabash, which started in UK operations six years ago from Robson's own home now employs 45 people, and had a turnover last

year in the region of £6½ million.

All this will be music to the ears of the company's new president, John Bourg, formerly a vice-president of General Electric, who took up his appointment last week.

Wherever Wabash DataTech International goes, Eyecote (Data Devices) is likely not to be far behind. Eyecote, whose managing director is Mary Robson (Jim Robson's wife), is based up the road from Wabash and is the sole importer for Californian company Data Devices magnetic computer tape cleaners and other maintenance equipment.

The company last month launched a new floppy disc range, Phoenix, which is made by Wabash.

**School WPs**  
BIRMINGHAM schools and colleges are getting Caltex word processors following a £400,000 order from the Birmingham Education Authority. The order, for 240 word processors, is the largest yet since Caltex of Surrey was launched in 1981.

**Broadcasting aid**

THE BBC has placed a £313,000 contract with Logica for a turnkey computer system to assist with scheduling of overseas broadcasts.

Information of BBC schedules and the quality of reception will be put on to a database and used to optimise the output of transmitters.

**Wang's profits**  
Wang Labs quarterly results last week turned in mixed results. Wang Labs quarterly figures show it is continuing to drive in spite of a difficult trading environment, while Data General results indicate it is now halting the dangerous slide of last year.

Wang's profits for the third quarter just ended were up 38% worldwide to \$35 million from \$25 million last year. Revenue was up by 32% to \$393 million from \$297 million.

Wang is now confident of achieving its 30% revenue growth target for the year, with profits higher still. Office automation is the area in which it is doing best.

Data General meanwhile reported quarterly revenue of \$187 million against \$181 million in the same period last year. Service income accounted for the growth, while supplies of equipment declined — and profits were down to \$3 million compared to \$5.6 million in 1982.

President Ed de Castro said any sustained improvement in DG's

**£500,000 order**

CINCOM Systems, has won orders worth £500,000 for process control software from leading UK companies including Imperial Tobacco, Spillers Foods and Teknix. The package, called ARPS, Manufacturing Resource and Planning System, will run on serial makers of computer, and the recent orders include software to run on IBM, Digital Equipment and ICL hardware.

**High speed jeans**

DENIM jeans pioneer Levi Strauss has ordered \$40,000 worth of data communications equipment from Motorola subsidiary Codex to link Europe to complete an extension to its network linking European distribution centres. The contract is for high and medium speed modems, and multiplexers.

Displaying a non-existent system for delivery several months down the road is one way for a vendor to gauge market acceptance; if the customer base is too small to justify research, development, and production, the product can be quietly killed, thereby avoiding a financial misfortune of similar actions.

In a statement issued recently, Paradyne officials stated that they had engaged in no fraud on the SSA at the demonstration or otherwise.

Paradyne demo was a fraud, says US body

by Howard Karter  
THE Securities and Exchange Commission (SEC) recently charged Paradyne Corp of Largo, Florida, with fraud and misrepresentation in connection with a contract to supply the social security administration with a minimum of 1,830 systems.

The SEC civil complaint alleges that in its effort to win the social security contract, Paradyne conducted a misleading and fraudulent demonstration for SSA officials. The product demonstrated at the Paradyne P-840 microcomputer was actually dumbed-down DRC PDP-11/03 that had been dismantled and placed inside Paradyne cabinetry.

Moreover, the P-840 micro was not then a real product, and was hurriedly created in a feverish burst of activity in the following months. Paradyne is also alleged to have demonstrated an encryptor that

was actually nothing more than flashing lights on an empty box.

The SEC complaint seeks to enjoin Paradyne from any further such alleged misrepresentation. If true, the misrepresentation would hardly be the first such action: in recent years, virtually every major computer trade show has been followed by widely-dispersed rumours of similar actions.

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**Finnish buyer**

MARCONI has found another

overseas buyer for its fast-switching

high frequency system, MFT, which in 1981 won the com-

pany's Queen's Award for Tech-

nology. Finland has ordered a

system for its Department of Posts, Telegraphs and Telecommunications.

## SALES BRIEF CAP to offer £1m worth of advice

THE CAP group has picked up £1 million of consultancy business from leading insurance companies through its London commerce branch. The companies want advice on how best to update or replace existing online systems to administer insurance policies.

CAP systems analysts will be involved with studies of the feasibility of converting to distributed systems possibly with local area networking, and with performance evaluation of new hardware. Insurance companies which have come to CAP for consultancy include Commercial Union, Prudential, Municipal Mutual and BUPA.

### Councils' choice

MICRODATA subsidiary CMIC has now installed 20 computer systems worth over £3 million in West Country local authorities, following three more orders worth a total of £500,000 from Exeter City Council, Penrith District Council and Wimborne Council in Dorset. Nine out of 10 Devon district councils now use UK-made CMIC equipment for rating, receipts, rents, mortgages, nominal ledger and payroll.

### Medical service

MAINTENANCE contracts for all 24 of BUPA's UK hospital systems based on Digital Equipment PDP-11 computers have gone to Alvernon Computer Systems. The company recently completed installation of its sixth patient administration and billing system for BUPA, bringing the total value of business for the private medical group to £250,000.

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### Wang's profits

earnings was tied to sustained improvement in the world economy.

But the results are better than those in the previous quarter, when profits fell 79% against the 1981 figure. In that period Data General earned only \$3.1 million compared to \$14.9 million in 1981.

Prime's profits have dropped a fifth over those made in the first quarter of 1982, though some of the fall is accounted for by investments such as its acquisition of Compedita, the UK CAD/CAM firm, last year. Prime also blames the strong dollar and the continuing slump for its poor performance.

The minicomputer field leader Digital Equipment, celebrating its 25th birthday, is relying on its two new additions to the Vax range as its main weapon in fending off the Wang-DG-Prime challenge. At the top and the Vax 11/782 and at the bottom the Vax 11/730 has strengthened its position. DEC's 1982 income was up 21% worldwide to \$3.8 billion — of which £174 million was earned in the UK.

President Ed de Castro said any sustained improvement in DG's

turnaround will be welcome.

### Christmas software for toddlers

by John Riley  
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### 16-bit Ada is in the pipeline

by Philip Hunter

THE 16-bit Ada compiler for 16

bit microcomputers is being de-

**DATA PROTECTION**

Hannan Rose thinks data processing professionals should stop thinking of themselves as just technicians

# Act responsibly if you want to receive mature treatment

The government proposes to give itself widespread exemption from the provisions of the Data Protection Bill.

There will be no scrutiny or review whatsoever of information required for the purposes of national security (Clause 27) and Clause 28 would waive the requirements of confidentiality for information required for fighting crime, collecting taxes and duties and controlling immigration (Computer Weekly, 7 April).

However, the government has very firmly set itself against granting exemptions outside very narrow areas of health and social work (Clause 29), judicial appointments (Clause 30), "home" computers and unincorporated clubs (Clause 31) and other specified spheres such as information covered by legal professional privilege and statistical and research data (Clause 32).

It is likely that the government will come under renewed pressure in the House of Commons to modify these provisions. First, given the storm which has grown up around the clause in the Police and Criminal Evidence Bill which would have allowed the police access to otherwise confidential information, Clause 28 will probably be attacked again.

This battle will be particularly sharp if those who have been so concerned with the Police and Criminal Evidence Bill realise that the government intends that a circuit judge will have to agree that - for example - a lawyer's, doctor's or priest's records would materially help enquiries, whereas the Data Protection Bill only requires the person holding the information to have "reasonable grounds for believing" that failing to make a disclosure would prejudice the prevention or detection of crime, the apprehension or prosecution of offenders, the assessment or collection of any tax or duty or the control of immigration, and that there is no exemption for hospital or pastoral records.

This last point opens up a wider area of debate: to what records should an individual

have access and to what extent should this access be determined by the accident of whether the records are held automatically or manually?

This was never debated explicitly in the House of Lords although it was raised on a number of occasions when the possibility of exempting further categories of information, such as personnel records, was raised.

The argument was often couched in terms of a concern for business efficiency, for companies might choose not to put their records on to computers if this led to them being subject to the provisions of data protection legislation whereas any material kept manually would not be so covered.

It should certainly concern the computing industry if a measure which should create greater confidence in computing inhibits the use of computers.

Further, the same issue is raised by the practical consideration of whether the Registrar with a staff of 20 is going to be able to cope with the work which is likely to be generated by the legislation.

It might, of course, be that

**The whole concept of data protection would come into disrepute if the mechanism of control proved incapable of dealing with the work generated by legislation**

Many of those closely involved with the issue of data protection regret that the government has decided not to follow the recommendations of the Lindop Committee for a Data Protection Authority but this is a political - not to say ideological - decision based upon the philosophy of minimising the size - and cost - of governmental activity and conventional universities which still keep their examination marks manually were not required to disclose them to the examinees.

The problem requires some background of the examining process in any large organisation with, say, 25,000 students each taking four (or more) subjects. Each subject might be made up of more than one paper, or more than



"It holds full personal and professional details of all our major opponents."

one section of a paper, which will be marked by different people.

In any case, a senior examiner will read a selection of papers to see that there are no gross discrepancies. Then there will be checks to ensure that no subject has been unduly difficult - or, for that matter, unduly easy.

Finally, in any examination where papers not taken individually but a pass or a class of a degree depends upon the candidate's overall performance in a number of papers, that overall performance is reviewed.

At the end of this process, the same "raw" mark might mean different things in different papers and it is inevitable that some candidates will be left failing a subject or a whole examination by a narrow margin or will just miss a higher class.

The problem of providing 125,000 sets of explanations of marks will be great (in some cases even embarrassing) especially as the examining bodies would wish to ensure that the information was not merely intelligible to those who receive it (as now required by Clause 2(1) following a government amendment in the Lords) but is intelligent and defensible.

The Bill does provide for a fee to be charged which is supposed to cover the costs of providing information to the individual ("the data subject").

This raises a further problem in that the fee should not be such as to prevent individuals obtaining the information held about them and this will, therefore, be a prescribed maximum and this might not be sufficient to cover the costs in a complicated area.

These are, however, practical difficulties and not the same as the principle of whether it is right that examinees should have access to their examination records. At first glance, it would not seem unreasonable that they should; but could there be some unintended consequences of this?

In particular, there is a danger that the examination process will be distorted to avoid the difficulties of narrow failures. If only 5% of marks mean a narrow failure on a paper or the margin between one class and another, in a system with 100,000 papers, there are 5,000 likely requests for re-marking which are either to be refused or granted, threatening the organi-

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## INTER-OFFICE MEMORANDUM.

Ian Clipped this from Office Equipment Index. I think we need to talk to Data General. Can you set up a meeting Gerry

With the information presentation facilities available on Data General's CEO, and the Trendview graphics package, executives are able to access data bases on the system to interrogate the information needed for report writing or business analysis. They can also prepare their own charts on the screen or graphics printer without having to learn any computer language.

Making use of the CEO system as a word processor allows the executive to draft his own letters or reports, note them as he wishes, to 'mail' them to staff involved, or print them out on associated letter quality or draft printers. Formatting and editing of this word processing is left to the admin staff, have the use of sophisticated indexing

# We may not be the 1st name you think of, but we'll be 2nd to none on your short list.

In fourteen years, Data General has supplied 114,000 computers worldwide.

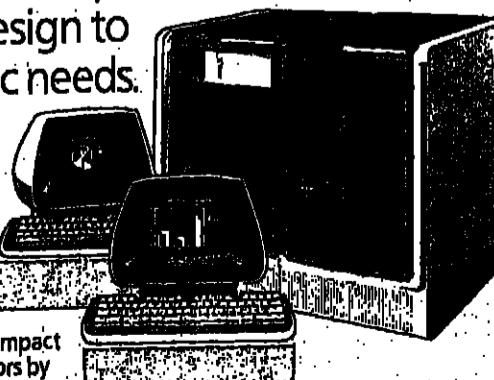
We have supplied over 10,000 systems in the UK. We are among the Fortune 500.

Our computers from the desktop CS/5 to the super MV8000 are compatible throughout the range.

They're also compatible with some rival systems. (Which is very cost effective when you're linking our computers to systems other than ours.)

We don't merely sell the 'Machinery'. We can undertake total projects in total co-operation with you. From applications software design to hardware suited to your specific needs.

Backed by very comprehensive support contracts.



Marketing Communications Division, Data General Ltd., Hounslow House, 724-734 London Road, Hounslow, Middlesex TW3 1PD.  
I want goods that deliver the goods. Please send details of your Eclipse-based systems.

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

Tel. \_\_\_\_\_

15  
15  
15

We deliver the goods that deliver the goods.

**Data General**

# IBM share stall improves prices

WITH its share price stalled, IBM's customers can expect better purchase prices as the company looks for "revenues now" according to a recent report from Canada.

Wall Street, the financial centre of the United States, was, to put it mildly, euphoric about IBM's annual results published a few months ago.

The euphoria didn't rise to pushing the share price to the \$125 that many analysts thought it should reach, though, and Canadian IBM watcher Bob Djurdjevic reveals in his latest newsletter that IBM has suffered price erosion of 22% a year in 1982, and 20% a year at a compound rate over the past five years.

To achieve the 13% a year sales revenue growth that IBM has actu-

ally shown over the past five years requires a 30.8% a year annual growth in unit volume of business.

This, according to Djurdjevic,

brings with it overheads in the form of additional sales staff,

larger production facilities, bigger premises, etc, all of which add up to higher costs.

To just hang on to unchanged

profits over the years IBM would have to make a gain year on year of 17.8% in cost savings through higher productivity. This Djurdjevic compares to walking on water, and the buyers of shares on Wall Street, the people who actually give judgment on both a company's performance and the brokers' recommendations, just don't think that IBM can walk on water.

In fact, IBM's costs over the five

## ... but who cares about IBM Japan?

WHO cares what happens to the Japanese subsidiary of IBM?

Well, American investors for a start. They collectively reduced IBM's value on the US Stock Exchanges by \$1.5 billion on the news that profits at the Japanese subsidiary had dropped by 9.2%.

IBM Japan is probably the company's biggest overseas subsidiary and in 1981 the subsidiary turned in substantial sales and profit gains, alongside an increase in exports of over 50%.

Predictions for 1982 were nothing if not rosy and centred around estimated growth in sales of 25%.

Part of the importance of the projections lay in the fact that if they had been achieved IBM Japan stood to regain the title of the biggest computer company in Japan, a title the company lost to Fujitsu only two years ago.

Titles like number one company count in Japan and Fujitsu, which put on sales growth of just under 16%, took the IBM projections seriously.

In the event, the margin, far from moving against Fujitsu, has moved in that company's favour.

According to IBM the reasons for the stall in sales growth and for

the profit decline was an increase in material and production costs and partly to foreign exchange losses on imports caused by the sharp depreciation of the yen. In fact, the Japanese yen has appreciated throughout the year against most currencies.

None of the Japanese computer manufacturers reported increased material or production costs and what IBM seems to be trying to do is conceal the impact of the Japscam affair on the company's order book.

Profits, which weren't specified, grew at 100% according to the company and with an average return on capital at 5.7%, North Star has not had recourse to its £3 million line of credit with the local subsidiary of Banque National de Paris Group.

## Prutec invests

PRUTEC, the venture capital subsidiary of insurance giant Prudential, has invested £2.5 million in Panorama Office Systems Ltd.

The company, based in Milton Keynes, has developed a replacement

for the office typewriter called the personal Typing Centre.

While the Japanese commenta-

tors feel that the failure to meet the projected sales target of 25%

growth and the fall in profits

proves them correct, they are at a loss to explain the very small growth in overseas orders.

It was widely expected that overseas orders would make up any shortfall.

More of the same from IBM.

This means that the opportunity

to get a better deal on an equipment purchase from IBM will continue, where a customer can take advantage of the situation. How much of an advantage can be gauged by the fact that when IBM announced a 15% drop in the purchase price of some mainframe products last year, the company simultaneously announced a 15% hike in lease charges.

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## MSA may make even more money



IMLAY...credit

**by George Black**  
MANAGEMENT Science America's revenue will rise from \$96 million last year to \$287 in 1986, predicts a study of the company's finances by New York business analysts Frost and Sullivan.

MSA, re-established in 1971 under US bankruptcy law to grow into the largest independent software house in the world, is expected to make over \$21 million profit in three years' time.

Credit for this is given to chief executive John Imlay, for cutting back loss-making consultancy and bespoke programming enterprises and switching to packages.

But despite MSA's great success the market remains highly competitive and the report warns that MSA has a number of potential rivals with substantially greater resources.

IBM, despite its current support for independent developers, will probably move more into applications software as it becomes more lucrative, according to Frost and Sullivan. Other key rivals are seen as Informatics, Applied Data Research, Cullinet, Panosphic and UCC.

Changes in accounting methods could lead to MSA's leading position looking less good on paper; ADAPSO, the trade group, is now considering changes in how revenue from maintenance is treated by software companies in their results.

In terms of earnings per employee MSA came only fifth in the league, which was led by Panosphic. But MSA's spending on research and development at nearly \$16.4 million a year, far outdistances others in the field.

Following agreements between MSA and hardware makers Honeywell and Sperry on marketing versions of its packages for their mainframes, further such deals are in the offing, the survey suggests.

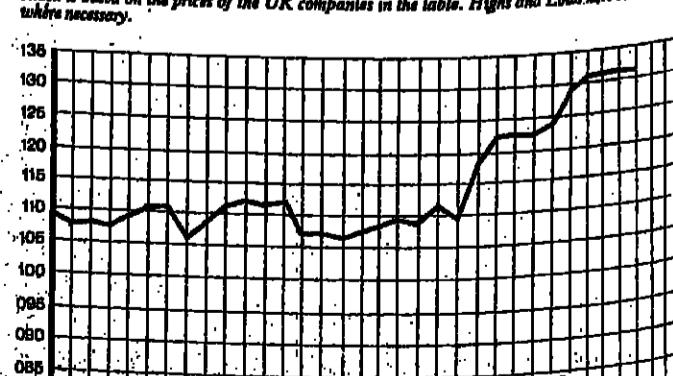
MSA has been historically IBM-dominated, and reluctant to commit itself to supporting possibly unprofitable non-IBM projects. But in the last two years agreement has been reached with both Honeywell and Sperry for them to make their own conversions with MSA's support.

## SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Data BM483		Index 131.20				Change -8.7			
		Pence	London Stock Exchange	Pence	Ctgs	Pence	Ctgs		
1983				1983					
High	Low		Block	Price	Ctgs	High	Low		
409	340	ACI (App Com) (28p)	500	-18	231/2	303/4	Amdec Inc	312	-7
214	170	BOC Nrl (125p)	210	-18	251/2	281/2	Apple Inc	219	-1
181	124	Comd (20p)	183	-	45	47	Apple Datas Pro	412	-2
226	162	Cat Group (28p)	132	+4	18	111/2	Apple Datas Pro	119	-2
298	640	De La Rue (26p)	665	-25	12	97	Comp Auto	95	-2
406	411	Ferranti (50p)	501	-22	20	20	Computer Data	20	-2
267	87	GDS (28p)	210	+6	80	84	Data General	21	-1
47	41	Kalamazoo (10p)	47	+3	127/4	196/2	Digital Equip	176	-16
278	270	Memory (10p)	270	+10	51/2	47	Digital Equipment	51	-1
144	144	Mitred (28p)	150	+14	36/2	49/2	Digital Equipment	49	-1
248	187	Monica (110.00p)	185	-27	85/2	95/2	Digital Equipment	95	-1
2168	877	Novel Data	1820	-37	85/2	88/2	Eastman Kodak	88	-1
710	710	Philips Lamp (51p)	213	-17	88	98	Eastman Kodak	98	-1
52	52	Plenary (50p)	604	+21	103/2	105/2	Hewlett-Packard	105	-1
624	418	Race (Electrop)	481	+17	74	74	Honeywell	74	-1
222	223	Res Com (28p)	348	+2	28	30	IBM	30	-1
278	278	Systems Dev (10p)	276	-8	14/2	15/2	Interdata Int'l	15	-1
177	138	UCAT (50p)	155	-8	114/2	124/2	Interdata Int'l	124	-1
55	78	Unisys (28p)	78	+8	114	127/2	IBM (Main)	127	-1
218	188	Var Comp (10p)	98	+3	44/2	52	IBM (Main)	52	-1
270	188	Wt Storage Tech (20p)	178	-18	32/2	35/2	Interdata Int'l	35	-1
94	27	Y2K (28p)	180	-	32/2	35/2	Interdata Int'l	35	-1
218	180	Memory Comp (110p)	187	-8	20/2	23/2	Sperry Corp	23	-1
328	310	Microgen (10p)	268	+18	17	17	Tandem	17	-1
117	81	Atlas Int'l (10p)	102	-10	18	18	Tandem	18	-1
118	108	Bell & Howell (10p)	102	-10	18	18	Tandem	18	-1
60	63	Trident Corp (10p)	70	-7	87/2	97/2	Vixy	97	-1

The table shows the closing prices in London on Friday and in America on Thursday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



Company News is compiled by Kevin Cahill.

## North Star sales rise by 90%

the profit decline was an increase in material and production costs and partly to foreign exchange losses on imports caused by the sharp depreciation of the yen. In fact, the Japanese yen has appreciated throughout the year against most currencies.

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grew at 100% according to the company and with an average return on capital at 5.7%, North Star has not had recourse to its £3 million line of credit with the local subsidiary of Banque National de Paris Group.

While IBM deny that the com-

pany has experienced any loss of

orders over the US court case in

which IBM sued two Japanese

computer companies, Hitachi and

Mitsubishi, credible comments

in the Japanese press

are that the

company

lost

its

title

to

Fujitsu

two

years

ago.

There's nothing like Concurrent CP/M in the personal computer world, and you can get it only

# CONCURRENT CP/M™

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# Scicon gets its Manman for Vax

MANMAN, one of the most successful manufacturing software packages, has been converted to run on DEC's Vax minicomputers. It is undergoing trials at two US sites and is due for launch in this country in late summer.

The system was developed by ASK Computer Systems in California in 1970, the brainchild of Sandy Kurtzig, a then 23-year-old woman whose fortune since has been built on this single product.

She began work on it in her spare bedroom and is now president of a company which expects to turn over \$35 million in 1983.

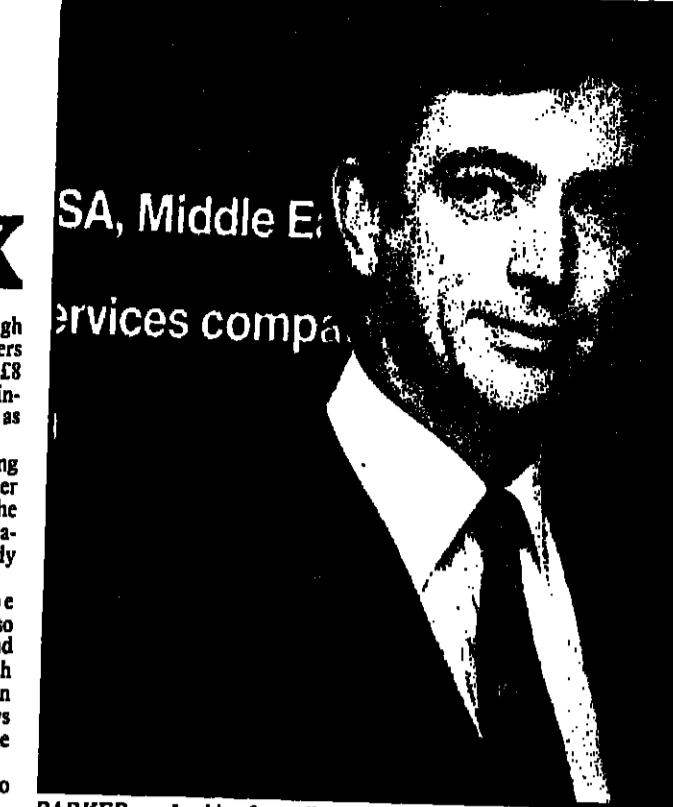
The system has expanded to some 200,000 lines of code and has 450 installations worldwide, most of them in the US. Up to now it has been entirely based on Hew-

lett-Packard's HP3000 mini-ASK's 200 staff sell and support it in the US, but licences have been granted for distribution in the UK, France, Scandinavia and New Zealand.

British agent is the BP subsidiary and Europe's largest software house, Scicon. Now that the 20-month conversion has been completed, Scicon is looking for a pilot site to launch the Vax/11-750 and 11-780 version here.

Despite the slowness of British manufacturing companies to discover the benefits of computerisation, products division manager Mike Parker is optimistic. He admits it has been an uphill struggle to convince conservative factory owners of potential cost-savings.

Most of the 35 Manman users in



SA, Middle East  
services compa

PARKER... Looking for a pilot site in the UK.

## SPL chief retires at 60

SPL INTERNATIONAL chief Peter Adams is to retire on reaching 60 at the beginning of November. Adams handed over the managing directorship to David Thomson last December and now has only a directorship of the holdings company SPH.

He joined the company from British Overseas Airways Corporation in 1968, five years after it was set up. He was manager of the real-time software division, joining the board in 1972. Three years later he became managing director, taking over from the founder Ken Barnes.

## MICRO NEWS

# Europe to get Corona IBM PC lookalikes

US COMPANY Corona Data Systems is gearing up to bring its pair of IBM lookalike micros into Europe, following its success in America. Over \$100 million of orders have been signed there from major distributors for the desktop and portable pair.

The Corona PC and its portable brother were launched last November in the US, and are getting their first European showing at this week's Hanover Fair, where Corona's European marketing manager, Fred van de Ouderweert, will be aiming to sign up the first batch of European distributors for the machines.

Like the IBM Personal Computer, both Corona models are based around the Intel 8088 microprocessor, and run MS-DOS and CP/M-86. They are software and hardware compatible with the



VAN DE OUDERWEERTER... Looking for European distributors.

the most likely place for Corona to move the highly labour intensive board and case manufacturer. Corona was set up in 1981 to

develop hard disc subsystems for Apple and IBM micros. The Corona PC family is its first venture into complete systems.

Production is in California at present, but according to van de Ouderweert, other manufacturing facilities will be needed to keep up with demand. Korea looks

UK MICRO owning households are about to hit the million mark, and look set to reach double that number by the end of 1985. According to a survey report from Liverpool-based Gowling Marketing Services, 940,000 homes — nearly one in 20 — have a microcomputer, and a seventh of these have two or more machines.

Ownership is highest among AB and C1 households. The main software used is games packages, though educational uses rate highest in a quarter of the homes.

Eric Gowling, Gowling's managing

director, reckons that micros as gifts will exceed sales to hobbyists or enthusiasts. Established 'cheap' micros do well in gift sales — 90% of last Christmas' gift micros were ZX81s, Spectrums or Vic-20s.

The survey report was based on a survey of 2,000 households carried out by the British Market Research Bureau. Copies are available from Gowling Marketing Services in Liverpool.

*Micro News is compiled by Robert Parry*

are 18 or younger, and only 12% 40 or over. Females appear to have little interest in computers, the report comments.

Two types of neighbourhood seem to stand out as typically micro-owning: modern 'middle-price' owner-occupied housing, with young families living there, and high status suburbs.

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Not surprisingly, Sinclair machines lead the pack. The ZX81 has 43% of the market, the Spectrum 14%. Next comes Commodore's top seller, the Vic-20, with 12%. Nearly half of these machines were bought as gifts — 57% in December last year, when 40% of the whole year's sales were made. Sales for 1982 represent 60% of the home computer base to date.

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## PPL sells £100,000 of accounting systems

PACKAGE Programs has sold £100,000 worth of accounting systems to four insurance companies. It now has more than 20 clients in the insurance sector, including Phoenix, Commercial Union and Lombard. Latest to sign contracts with the London software house are Graham Life Assurance Society, United Friendly, Scottish Widows and Stewart Wrightson.

The first three are adopting the general ledger system. Graham is also to use PPL's financial reporting method.

Stewart Wrightson and Graham are taking on the accounts payable system and United Friendly is to use the management and district reporting system.

The general ledger and financial reporting packages are being upgraded for ICL hardware in an undertaking which the subsidiary company PPL-MMS is calling Project Proteus. It is due for completion by June and is aimed to give compatibility with the IBM general ledger version and across ICL's 1900, 2900 and ME9.

## Revelation

A FRONT-END to the IBM personal computer's operating system PC-DOS is being marketed by Doncaster systems house Innovative Data Machines (IDM). Called Revelation, it was developed by Cosmos in Washington, US, and is based on concepts drawn from the Pick operating system.

IDM managing director Ned Ratcliffe claims the software tool is compatible to existing Pick systems as well as applications on CMC Reality, Honeywell, Unimate and DEC hardware.

## Motorola to tackle Seeq with single chip EEPROM

MOTOROLA is to challenge Seeq, the pioneer of electrically erasable PROMs in the single-chip computer market. An EEPROM version of its 6805 processor, the 6805K2, will come out next year, to take on Seeq's 72720 "adaptive microcomputer".

Motorola has already built single-chip microcomputers containing EEPROMs for on-chip program memory, but only as custom devices, not as announceable standard products.

The core of this product spectrum, at the low-cost end of the market is the 6805, derived from the original 6800 microprocessor and itself spawning more devices.

General trends have been to greater ease of programming and flexibility through EEPROM and now EEPROM versions, and to low-power CMOS devices.

It also has an off-shoot into a serial bus family, the 6804, which is slower than the parallel bus 6805, but comes out cheaper. HCMOS versions of this will appear this year, and HCMOS early in 1984. HCMOS is Motorola's merged NMOS and CMOS technology, using CMOS devices in the power-hogging bits of chips.

"HCMOS is our thrust," says Goldman. "We made the key decision last year, and are very happy with it." Others have taken similar paths, as they move to more densely packed chips at the top end of the processor scale.

By integrating program memory, whether mask-programmed ROM fixed at the design stage, EEPROM or EPROM, with RAM and peripheral functions on to the single processor chip, the component count for a functional system is dramatically reduced, with cost savings in assembly as well as in the components themselves.

Motorola's approach to this market — still its most lucrative, accounting for something like 70%

of its UK business — is to offer a wide spectrum of devices. They are based round the same CPU element, with combinations of RAM, ROM, EEPROM, I/O and functions like analogue-to-digital conversion.

"We use design modularity to optimise die size, and include features high volume customers want," says Motorola's microprocessor division general manager Murray Goldman.

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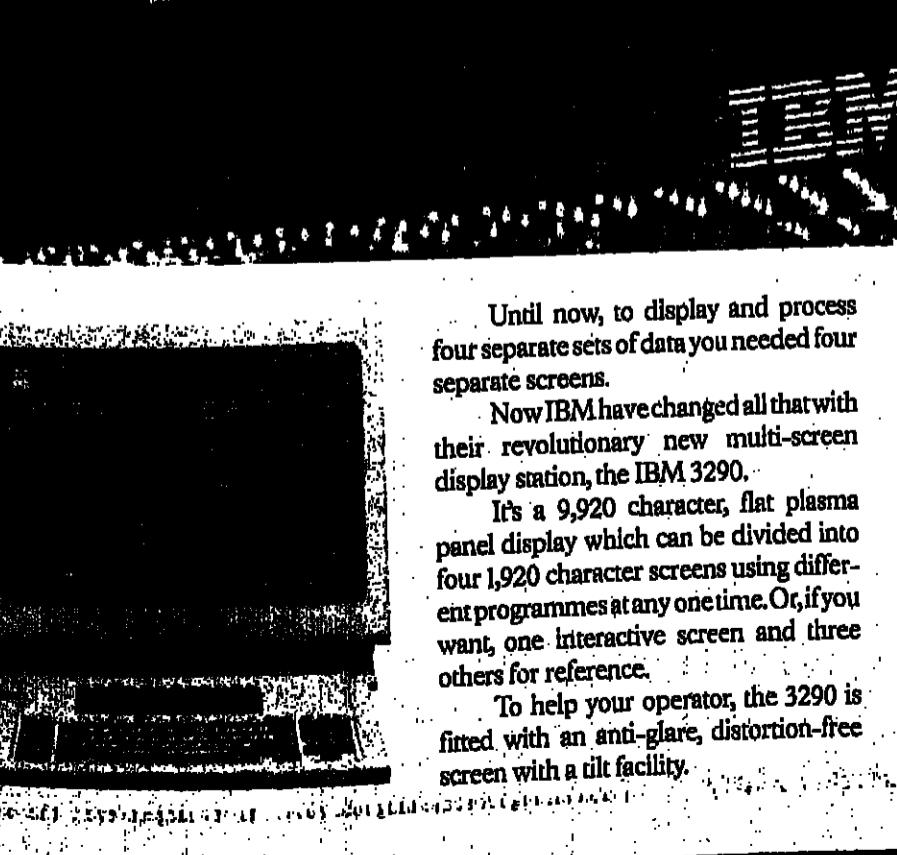
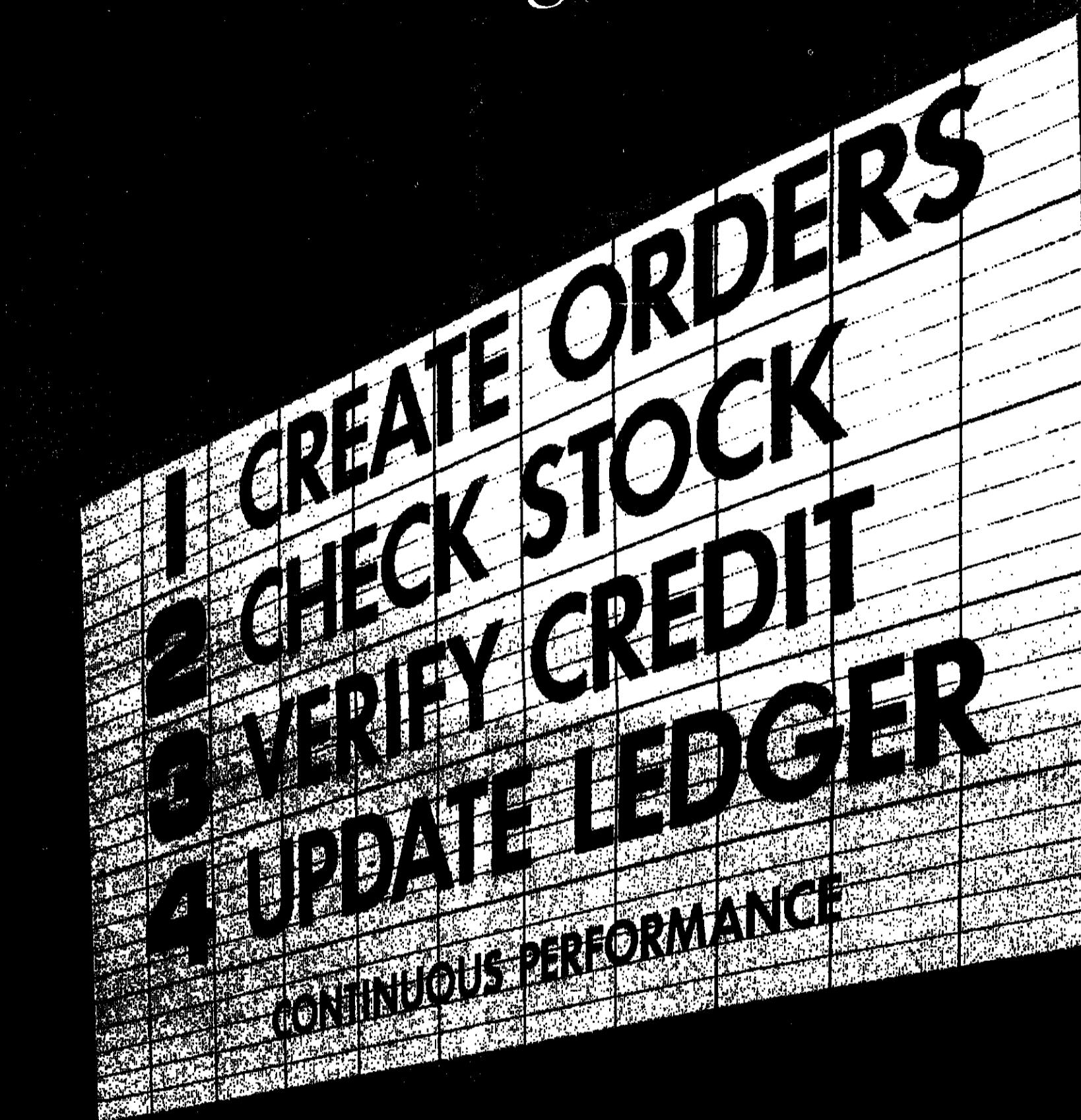
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IBM present 4 separate programmes now showing on one screen.



Until now, to display and process four separate sets of data you needed four separate screens.

Now IBM have changed all that with their revolutionary new multi-screen display station, the IBM 3290.

Despite its size it could really increase your productivity, and reduce the need for printout and additional work stations.

Fill in the reply paid coupon or attach your business card and we'll send you more information.

However, to really appreciate the remarkable quality of this exciting work station, ask your account representative to arrange a demonstration.

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28 The Quadrant, Richmond TW9 1BR.  
Please send me more information about the  
IBM 3290.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Position \_\_\_\_\_  
Address \_\_\_\_\_

Post Code \_\_\_\_\_  
Tel. CW441

IBM  
UNITED KINGDOM LIMITED



**PLATFORM**

**Tony Blake** is managing director of Xtel, the data communications specialist based in Hatfield, Hertfordshire.

**Academia and trade can thrive together****PROFILE****The man who gets paid for saying how good DEC is**

AS vice-president of corporate relations, Al Mullin must be good at his job. His company, Boston-based DEC, recently produced half-year figures showing a 38% drop in profits compared with the first half of 1981/82.

DEC shares, which are quoted on the New York Stock Exchange, promptly jumped from \$100 to \$120!

In other words investors, principally in the US, increased their estimate of what DEC was worth by over \$1 billion in one day.

And where does Mullin fit into this? His job is to travel the world telling all the people who have invested in DEC that they have done the right thing.

Despite the aura of success which surrounds the world's second largest computer company, this is not quite as easy as it sounds.

Investors like to see an annual income from their shares in the form of dividends. And this is particularly so with pension funds — probably the biggest group of investors in the world.

They have to pay their pensioners a monthly cheque, and can only do so out of the income they receive.

The core of Mullin's job is to tell investors that DEC does not pay a dividend.

More than that, he has to record that DEC has never paid a dividend, and to forecast that it will



MULLINS . . . "When the recession ends, DEC will be ready."

probably not do so until normal annual growth falls below 25%.

The current slippage, to 15% or

sion this century, and we're bound to feel the effect."

For DEC that "effect" is, though it is, that is much more bearable for the \$600 million the company has in the bank, than the 100% of new capacity the company has added in the past three years.

"When the recession ends, DEC will be ready," according to the hefty ex-banker from New Jersey.

In private, Mullin puts the message over with considered force:

In public, more of the physics enters the message, and the colour comes over with a sense of well-researched certainty.

Much of Mullin's life is lived in large meetings of investors and industry analysts. Often when people, not all of them DEC enthusiasts, see of DEC is Mullin a rostrum, articulating the company's situation, prospect and future.

A wrong emphasis, an unconvincing phrase from Mullin could write hundreds of millions of the DEC shares, just as easily as they put \$1 billion recently.

The caution necessary to do the job has entered his soul, and the private man is hard to divine. But the feeling of being a man, a good player, now named manager, is strong.

In a way, he's very like DEC — solid, safe, enterprise within its total bounds of conservative risk-taking and pleasant.

The extent of the problem the universities are facing was clearly elucidated by Brian Oakley, secretary of the Science and Engineering Research Council, which advised on the allocations. He explained that financial support was concentrated "where we believed it would do most good." There is nothing in that statement to take exception to. But here is the rub. Oakley added that "if you believe in centres of excellence, it is very difficult for new people to break in and now is not the time to dilute the effort."

If there is no room for new people to break in we might as well abandon our efforts to remain a force in information technology. The new technical universities like Stirling, Salford and City have been put forward as the UK's best hope of linking university research and the commercial marketplace. But because they are new it seems they have to go to the back of the queue when funds are handed out.

It is not Brian Oakley's, or the SERC's or the UGC's fault. They are trying to administer the system the best they can with the resources available. The problem is that there are not enough resources available to ensure the nation has an adequate base of skilled manpower. Education should be one of the nation's largest growth industries, and that it is not gives the lie to the government's purported commitment to our universities.

**LETTERS****Legend of the robot**

YOU quoted (CW, March 13) a story told by Dr Louis Robinson, IBM corporate director of university relations: "Legend has it that as a young man St Thomas Aquinas went to the home of his great teacher, Albertus Magnus, and found a robot at the door. The robot's duty was to enquire as to the business of the visitor. St Thomas, man of God, destroyed the robot, thus establishing that robots are evil things."

I should like to know the source of this "legend" and when it first occurred. Albert the Great and St Thomas Aquinas lived in the 13th Century yet the word "robot" was created only in 1923 by the Czech dramatist, Karel Capek, in his play, *Rossum's Universal Robots*.

Moreover, Thomist philosophy suggests that St Thomas would not be prejudiced against robots or any of the artefacts produced by human society unless they had been positively shown to be evil: "Grata non tollit naturam sed perficit."

J. ALAN SMITH

Epping.

**Introduction to Forth**

I READ with interest the article on Forth (CW, March 17). However, you failed to mention one of the most powerful versions on the UK market. I refer to the Acornsoft implementation for the BBC Microcomputer. This is a complete Forth system to the 1979 FIG standard, capable of taking full advantage of the BBC Microcomputer's powerful graphics and sound facilities, and written for us by Richard de Grandis-Harrison, chairman of the UK Forth Interest Group.

The system is accompanied by a book, *Forth on the BBC Microcomputer*, also written by Richard de Grandis-Harrison, which is a complete introduction to programming with Forth.

J. P. BENNETT  
Senior Languages Programmer  
Acornsoft  
Cambridge.

**A Bill that offends**

NEITHER fish nor fowl, nor good red herring. The Data Protection Bill now before Parliament has pleased no one. Computer industry bodies give it only the most grudging support, and that only because the Bill is necessary to bring UK law into line with the EEC convention on privacy.

Without it, a large amount of computer business with Europe would be at risk and the industry would rather have something than nothing. Outside the industry the Bill has attracted opposition from the UK's doctors in the form of the British Medical Association, the accountants represented by their Institute and a wide body of legal opinion.

A wise choice indeed. Who better than British Leyland to advise on the monitoring of soniferous activity on the shop floor.

IAN GOODWILL  
Blen Electronic Services  
Henley-on-Thames  
Oxfordshire.

**The young ones**

WHILE pop stars and tennis players continue to get younger year by year, an odd reversal seems to be occurring among high technology pioneers. Clive Sinclair, young businessman of the year at 42 (Computer Weekly, March 31).

I suppose I should, at 34, be relieved to learn that I am really a logical napkin-wearer though physically going white on top. Still, they can't be serious, can they? Maybe in a few years they will choose Ian McGregor.

GRAHAM BROWNLOW  
Croydon.

**Graffiti**

CHAD'S piece on the dial-an-obscene-telephone-call service offered by the US phone network reminded me of a bit of graffiti in a local callbox. For a good time dial 123.

Try it. You'll get all the secs you want.

J. KELLY  
London SW19.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics.

Daily Telegraph

**Who is John trying to kid?**

WHO does Laurie John (producer of the *Horizon* programme, *Better Mind the Computer*) think he is kidding? He is reported in *Computer Weekly* (March 31) as defending his programme by saying "I was anxious not to make any comment from myself, the commentary was very deadpan".

As a TV producer, he knows better than most that the choice of material and the way it is presented are at least as important as any spoken commentary.

And the message put over by

this programme as a whole was misleading and inaccurate.

For example, the *INTERNSITI* program for medical diagnosis (Pople and Myers, University of Pittsburgh) was presented as though it was a fully developed system in daily use in a number of hospitals.

During a visit to Pittsburgh last summer, Prof. Pople emphasised to me that this system (although capable of an impressive performance in its domain) was still just a research tool and that a great deal

of work had to be done before one of its successors could be made available for widespread use.

Now the commentary may not have said that the program was in general use, but the accompanying pictures most certainly gave that impression.

So let Laurie John remember that "the medium is the message" — not just the commentary. And let him get the message right!

DR J. R. W. HUNTER  
Lecturer in Computer Science  
University of Sussex

**Flexible computer studies**

I AM writing to provide information further to Dr F. J. Wright's advice (*Computer Weekly*, March 17) to school-leavers and careers advisers on flexible study.

At Oxford Polytechnic we have for over 10 years offered Computer Studies as part of a flexible "nodular course" leading to a BA or BSc Honours degree. Students in their first (qualifying) year are encouraged to undertake study in three areas, each of which falls within a separate field of study. During their second and third years, students then follow further study in two of these fields, that

nine modular credits in each of their two fields with three other credits that can be taken from other unrelated fields, to attain their degree classification which is based on the best 18 of their 21 credits.

Graduates leaving the Polytechnic are able to apply for posts in their two main areas and in addition, any of the connected subsidiary areas, a prospect that many employers find attractive.

A. G. TAGG  
Field Chairman, Computer Studies  
Oxford Polytechnic

**Flashing dangers from the cursor**

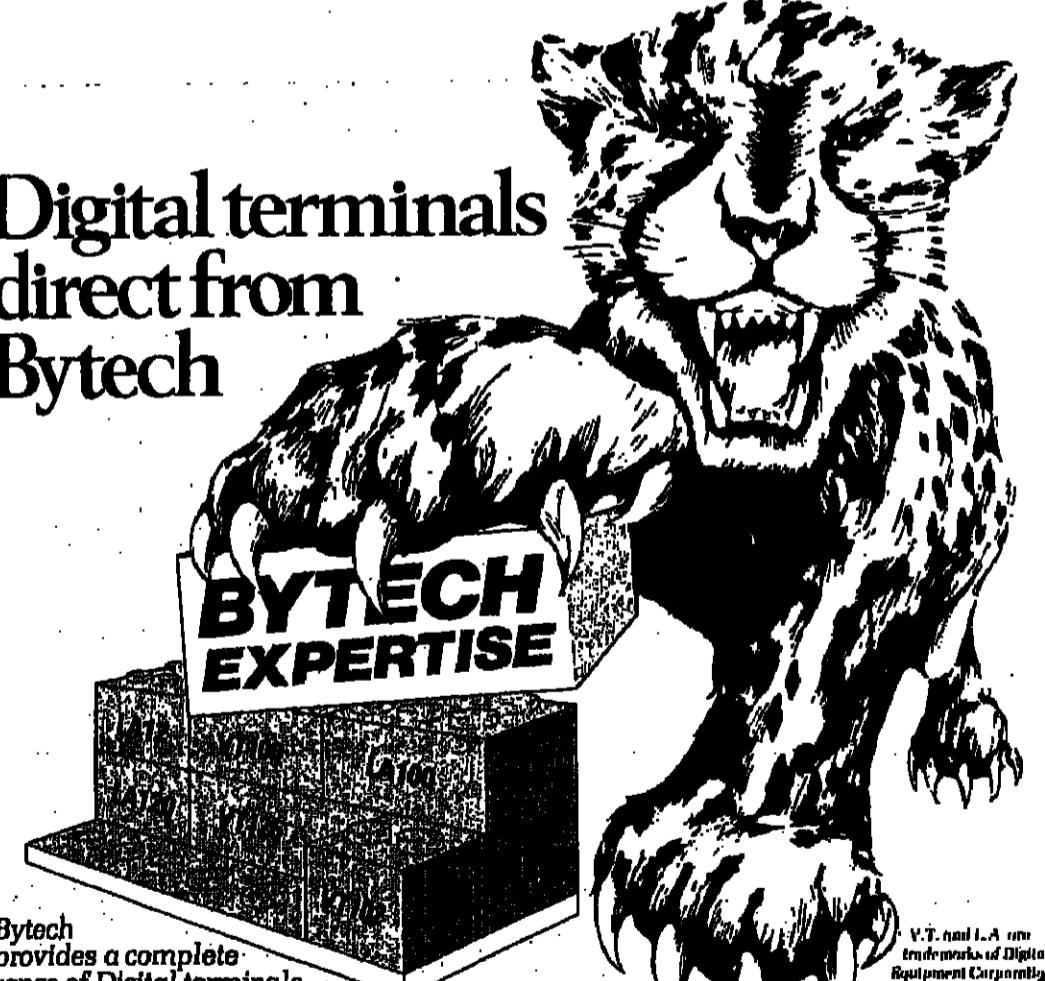
THE dangers referred to by Mr Woodnick (Letters, March 31) may be even wider ranging than suggested. We are collaborating with a West German software house which has itself worked together with medical institutes in that country to look into the ergonomic problems associated with screen displays, and the user aspects of microcomputer software in general.

Whether a government commit-

tee is the best vehicle for an investigation is questionable, however, since there is a lack of widely accepted evidence. One of the universities might well be interested in setting up a study with the aid of government funds.

We would be glad to co-operate in such a study.

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**DOWNTIME**  
**How to sell a system . . .**

SIMILAR sounding names can spell doom for microcomputer companies. The cautious, when setting out into the dog-eat-dog world of micro dealing, check any potential conflicts before fixing on what to call themselves.

One of the latest recruits to the morass of micro companies, John Clarke's Synchronised Computers, was originally intended to be named after the US company

whose product it will be distributing, Sci-Com.

But every cloud has a silver lining. The name Clarke ended up with at least ties in with the computer's Seiko label which conjures images of watches and a distributor in step with his product.

And Sci-Com is thinking of placing an order with Clarke for the Seiko computer. After all, a good salesman never misses an opportunity.

**... how not to sell a system**

WHAT do you do if you want to buy an ICL product in London?

Why, you go to an ICL dealer, of course.

But what if you don't know who the ICL dealers are?

Phone ICL itself, someone there will be bound to know, won't they?

Well, yes they'll know who their dealers are, but that's not much use if the experience of one pros-

pective purchaser is anything to go by.

The prospect rang and said: "Hello, I wonder if you can tell me the name of an ICL dealer in London?"

An ICL information officer re-

plied: "I'm afraid we can't divulge that kind of information over the phone."

Does ICL actually want to sell things?

Nor should it be assumed that once contact has been made everything will proceed smoothly. The difference in nature and purpose between the two parties leaves ample room for misunderstanding. It is important that a good working relationship be built up between the individuals involved, and this requires mutual respect and sympathy. Further, university personnel who embark on collaboration will often find themselves grappling with problems involving a clash of priorities between the demands of their own organisation and those of their commercial partners.

Many universities are now addressing these problems through the foundation of science parks or of their own commercial branches. These can work well and be effective in exposing universities to a commercial experience, particularly where the projects concerned are closer to the long-term basic research traditionally carried out by the universities.

Tony Blake

**10 YEARS AGO**

FROM COMPUTER WEEKLY OF APRIL 12, 1973: Liverpool University increased its computing power by ordering an ICL 1906A worth £1 million. Philip Chappell was appointed to the ICL board . . . the first Univac 9070 mainframe arrived in the UK . . . users criticised George 3 for being inflexible . . . CDC formed a joint company with the Romanian Ministry of Machine Tools and Electro Techniques . . . Hewlett-Packard computers and Leasys software combined to fight the locust.

Tony Blake

**WORKPLACE****The £5m IBM site nobody wants**

ONE way to insure against fire, flood or strike action at computer sites is to have an identical system waiting somewhere else to take over at a key stroke. But this is not on for a £5 million IBM mainframe installation.

To exploit this truth, a new £5 million project called Failsafe was announced last month by BL Systems and Atlantic Leasing, offering companies a share in a big IBM 3033 AP installation complete with full back up and peripherals.

Customers are offered four levels of cover, from £40,000 to £120,000. For the higher price, full use of the installation facilities is offered, with immediate transfer of computing services in the event of disaster. Advice on the telecommunications needed is offered for all levels of cover.

Already one full share in the Failsafe installation has been sold, to the Guardian Royal Exchange (GREA) at Lytham near Preston.



DISASTER... Where could you go from here?

"We needed the full cover because we've got all our network to protect," says John Fitzpatrick, a hardware manager of the company.

GREA had previously relied on an unequipped cold restart/recovery service, which would have taken several weeks to get up and running. "We never had to use it," says Fitzpatrick.

A share in Failsafe has also been sold to Multipart, a wing of British Leyland, no doubt partly because of the link with BL Systems.

**Disabled checks get exciting**

**MICROCOMPUTERS** have transformed testing of the mental and physical faculties of handicapped people, but two big problems remain: the tests are boring, and the results are too dependent on the way the tests are carried out.

But Middlesex Hospital's James Thompson believes boredom can be reduced taking a cue from video games, and he pointed to the Royal Hospital and Home for Incurables in Putney, which has pioneered much of the work on computerised psychological testing.

Improved sound effects, better graphics and built in reinforcement and reward are needed to motivate the patient, said Thompson. Ultimately the effective test will operate without supervision, like a computer game.

Automated psychological testing, known as APT, has become an accepted way of measuring mental or physical deterioration caused by brain damage, multiple sclerosis or old age. Many patients suffering these conditions cannot talk or hold a pen, and psychologist Sarah Wilson last year won a prize for developing a simple terminal with large keys for

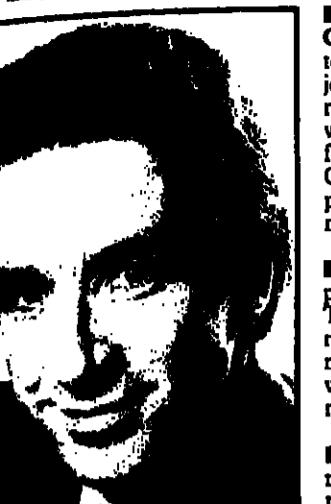
patients to respond to simple prompts.

Common tests include automated digital span in which patients are asked to key in series of digits displayed on the screen. Memory for words can similarly be tested, and Wessex Neurological Centre, Southampton, has developed a portable testing device that measures memory for faces.

More advanced tests have also been developed. Middlesex Hospital Medical School has applied artificial intelligence techniques to assess personal relationships in the fashion of so-called expert systems, the school has tried to implement the types of questioning used by psychologists on the computer, and have the system develop the interrogation according to the answers given.

Another new development is in the use of the computer to write psychological reports and make decisions about what further tests might be necessary.

The Apple micro is particularly favoured for psychological testing, partly because of the interest the company has shown. Apple sales people have been wont to turn up for conferences on the subject.

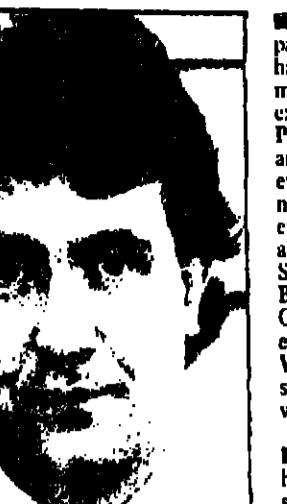
**PEOPLE**

■ Fortune Systems has appointed Grenville Edwards as manager, technical software support. He joins the firm from Bell Laboratories, where he was a technical development programmer. Manager for applications software support is Graham Howard, who was previously systems development manager at Olympia International.

■ Mike Borrelli has been appointed marketing manager for Triumph Adler UK's TA1600 range of 16-bit micro and minicomputers. He was previously with Philips Business Systems for nine years.

■ Don Hazel has been appointed manager of Leasco Software's Central Government and Nationalised Industries Group. He previously spent six years with the Littlewoods organisation.

■ Tandata Marketing's team has been strengthened by the appointment of Keith Allan as technical manager. He was previously sales manager with Memory Computer Services.



■ ITT Microcomputer Systems, part of ITT Consumer Products, has expanded its sales and management team to include five more executives. They are Barbara Primrose, formerly applications analyst/programmer, now software evaluator; Vivienne Harley, a newcomer to ITT, who is Northern area manager; Bob Harley, also new at ITT, who joins as Southern area sales manager; Sam Basu, formerly with Modular Office Systems joins as hardware engineering manager; and Brian Ward, previously a freelance consultant, is the new application software manager.

■ Currah Computer Components has appointed three members of staff to strengthen its development team. Mark Anson was formerly with Nine Tiles, where he was in software development; Alan Jones was previously at Sheffield University, where he worked after graduating from there with a B.Eng. degree; and Malcolm Beadle has joined Currah from a Darlington engineering company.



Inventor of ICL's information processing architecture (IPA), Gordon Peake, above, has joined Rediffusion Computers as board technology director. He takes over a technology group of about 70 people to bring on more products and strengthen the company's existing computer line. His experience in computer architectural bridging and networking strategies began with Honeywell, working on the task force that developed the firm's ISO-based distributed systems architecture, and later with ICL. Peake left ICL in May last year to join Compuvera as support manager for Europe and had been working on a European CAD/CAM development organisation when he was approached by Rediffusion.

**The AJILE isn't just another 16 bit micro!**

AJILE is the most powerful, portable 16 bit computer available in the U.K.



■ Martin Hole, a main board director of Duncan Branson, has been appointed managing director of the company's mini and micro systems division. The division, formerly called Duncan Branson Minicomputer Ltd, is now to be known as Duncan Branson Office Systems Ltd.

■ Alex Ash has joined Newbury Data Recording as European distributor sales manager. He was previously with Stag Terminals and Anderson Jacobson.

■ Sintrom Electronics has appointed Steve Skewins as product specialist for the company's microcomputer product group. He was with PCD Data Capture for five years as product marketing engineer before joining Sintrom.

■ Gould SEL has announced the opening of new sales offices in Birmingham, to be run by Midlands area sales manager Neale Wade. Wade formerly held a similar post in the Midlands with Geest Minicomputers. New office address is The Coach House, 95a Hagley Road, Edgbaston, Birmingham. Tel: (021) 454 3099.

■ Andy Day has been promoted to commercial manager of the CAB group. He was formerly a systems sales manager. Two other promotions at the company — Mark Hatton from manager of numeric control products to UK sales manager terminal products; and Dave Taylor, from Southern region sales manager to UK sales manager, data products.

■ Michael Meahan (above) has been appointed managing director of Perkin-Elmer Ireland. He replaces Stephen Maluda in accordance with the company's policy to appoint an Irish National to the post. Meahan was previously managing director of the EI Company in Shannon, Eire, where he worked since 1967.

■ Microsystems, Control Data, Codex UK and Cifer Systems, who are using the regional Compec for the second year running.

The Scottish show is to be held at Kelvin Hall, Glasgow from May 17-19. It is — along with its Welsh and Northern Equivalents — a spin off from the UK's premier computer show Compec UK. Compec North is scheduled for June 21-23 and the venue is Belle Vue, Manchester.

New exhibitors for Compec Scotland this year attracting many first-timers including British Telecom, CAB Group, Digital Equipment, Funzione Computer Products, GEC Computers, Grundy Business Systems, Olivetti, Hewlett-Packard and the Livingston Development Corp. Joining them are such companies as Racal Milgo, Trend Communications, Hytec

Unfortunately Microtax will only last a year, because not only rates, but the fundamental basis of the tax calculations change with each budget. A new Microtax will have to be announced every year.

Microtax runs on the Sinclair ZX Spectrum 48K machine, the Dragon 32, Vic 20 with an extra 16K Ram pack, the Commodore 64 and the Pet 4000. "Basically, you need 32K to get it to run," says Lavies.

It consists of 11 programs on each side of the cassette, all of them reading the same data.

Databases — will they ever be available to the end user? BCS Hampshire branch, Mountbatten Theatre, Southampton. 7.30pm.

APRIL 19 The past, present and future of word processing. BCS WP and Office Automation Specialist Group, Prudential Assurance, 142 Holborn Bars, London EC1. 5.30pm.

APRIL 20 Advanced workstations. BCS Data Communications Group, Chemistry Theatre, Birbeck College, Malet Street, London. 11.00am.

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Workplace is compiled by Philip Hunter

**PUZZLER**

If you look at a table of squares you'll find that 218089 and 219024 are listed consecutively. What is the next square in the list?

The puzzle can be done quite easily without recourse to pencil or paper.  
See page 53 for the answer.

# Computer staff maintain their pay levels—and expect to earn more

An NCC/Computer Weekly survey found computer staff had cause for optimism about their pay

THE good news for computer staff is that despite the continuing effects of the recession they have maintained their pay position and have brighter hopes for the future.

This piece of good cheer emerges from the 1982 salary survey conducted jointly by Computer Weekly and the National Computing Centre.

In the year 1981/2 pay rises in the computer industry varied on average between 7.4% for data preparation staff to 8.9% for data-base controllers.

Rises in 1982/3 are likely to be lowest for systems analysts at 5.5%, according to the survey, and highest for junior and trainee programmers at 7.1%. But the NCC's information officer Robin Gage hints that these figures could be underestimates.

"The high leaving rate and lack of training going on at present could combine to work in favour of established DP staff," he said. The implication seems to be that junior programmers currently earning around £3,500 will be pressing for big pay rises and if they are not satisfied will be moving on to new jobs.

Nearly a fifth of them opted to move on last year, with pay dissatisfaction being probably the

main cause. Stability was greater among better paid chief programmers and systems programmers—but even in these fields the rate of loss was more than 10%.

Meanwhile staff shortages were still running at a surprisingly high level for a country with nearly four millions unemployed: DP managers were complaining of a 7.8% shortage of programmers and a 5.7% shortage of analysts.

The lack of senior analysts/programmers and network controllers was also above 8%. The deficiency in training was indicated by the fact that only 27% of firms were employing junior or trainee programmers, whereas 59% were using trained programmers at some level.

Firms had taken on nearly a third of their programming trainees during 1982, but at the same time had lost almost a fifth of them in the same period.

A generally declining trend in percentage salary increases—in line with the general national movement of wages—is evident in the period covered by the survey. Rises between December 1981 and December 1982 were

■ Continued on page 17

JOB DESCRIPTION	Annual leave	Paid % overtime	Subsidised lunches	Company cars	Health/Life ins.	Ann/prod bonus	VALUE OF PERKS (% of salary)
Head of management services DP manager	25.0 24.7	— 3	51 46	60 51	60 44	31 29	16 14
Chief systems analyst	24.1	12	46	26	36	23	15
Senior systems analyst	24.0	15	58	12	45	32	16
Systems analyst	24.0	31	64	4	21	18	12
Chief programmer	23.9	21	46	18	31	20	11
Senior programmer	23.5	36	50	8	29	22	15
Programmer	23.2	54	55	5	17	22	11
Trainee/junior programmer	22.1	59	60	7	23	20	10
Systems programmer	24.3	26	53	1	34	25	12
Chief analysis/programmer	25.5	15	40	16	38	6	6
Senior analysis/programmer	24.7	17	28	2	30	14	8
Analyst/programmer	23.8	45	47	1	34	25	6
Network controller	24.5	61	44	7	32	24	10
Database controller	24.6	14	39	9	33	9	7
Operations manager	23.5	25	51	17	40	22	10
Shift leader/senior operator	23.1	72	52	—	23	21	10
Operator	22.7	70	42	—	16	22	10
Data prep supervisor	23.2	55	47	—	20	26	7
Data prep staff	22.4	66	44	—	20	20	9

Table 1: Percentage of staff who receive perks

## SALARIES

# Computer staff beat the recession

JOB DESCRIPTION	Increases paid 81-2	Actual (Dec) 82 salary	Increase forecast 82-3
Head of management services DP manager	7.7% 8.5%	16,058 12,811	5.7% 6.3%
Chief systems analyst	7.0%	12,760	5.9%
Senior systems analyst	8.1%	11,729	5.8%
Systems analyst	8.2%	9,720	5.5%
Chief programmer	8.1%	10,620	6.6%
Senior programmer	8.4%	10,033	5.9%
Programmer	8.5%	7,674	6.0%
Trainee/junior programmer	8.8%	5,508	7.1%
Systems programmer	8.2%	9,916	6.1%
Chief analysis/programmer	8.0%	11,244	5.6%
Senior analysis/programmer	8.2%	9,845	5.4%
Analyst/programmer	8.4%	8,083	6.7%
Network controller	8.8%	9,083	6.2%
Database controller	8.9%	10,084	5.7%
Operations manager	8.3%	9,906	6.2%
Shift leader/senior operator	7.8%	7,788	6.0%
Operator	8.2%	5,914	6.1%
Data prep supervisor	7.7%	6,053	6.0%
Data prep staff	7.4%	4,658	5.9%

Table 2: Results of the survey.

■ From page 16

around 8.9%, compared with 9.1% over the previous year.

Managers are predicting slower still rises in 1982/3—of the order of 5.1% to 6.2%. But actual rises reported this year have turned out to be about 1% above what was forecasted. This leads the experts to think that the 5.1% to 6.5% figures could be on the low side—it could turn out to be 7% to 7.5% instead, if managers feel pressures of high turnover and lack of experience in their departments.

But the report has its statistical limitations—as only two years were surveyed, it is not safe to deduce definite trends from the data available.

Regional variations are hidden behind the national figures given in the report. For instance, the national average for data processing managers is given as £12,800, compared to London's average of £14,600 and the North's £10,900.

Similarly, salaries depend heavily upon the size of the department involved and therefore the burden of responsibilities.

Managers in charge of five staff or less earn only £10,700, whereas those with 35 or more to look after get around £16,700. Variations about the norm are also striking, with 27% of DP managers getting £11,000 or less, while 29% earn more than £14,000—it seems to be payment on merit, rather than a set rate for the job, at least so far as

managing directors and their board members view the role.

Lesser variations can also be detected lower down the scale, with 38% of trained programmers receiving under £5,000 a year, while 31% of their colleagues took more than £6,000.

In larger departments it is not only the boss who benefits—programmers and operators can also expect to earn more there.

Staff in private-sector departments seem to fare less well in terms of salary than their counterparts on the public side. DP managers were getting only 97.1% in private industry and operations managers 97%.

But these figures could be distorted by the different sizes of departments and varying loads of responsibility. And perks apparently redress the balance, in some cases making private sector employees better off. For instance, senior systems analysis in private firms only get 99.5% of what those working for the government do. But fringe benefits push their total remuneration package up to 102%.

Estimating the value of perks is a very subjective exercise, the reporters admit. DP managers were asked to make an estimate for their staff, which reveals that perks play a very important role, though its scope is necessarily uncertain.

The value of perks reported in terms of percentage of salary varies from around 5% up to as much as 16%—across all grades of staff 10% of salary appears to be the average value.

Most common add-ons to pay were: paid overtime; subsidised lunches; company cars; health/life insurance; and annual or productivity bonus. Each of these extras is provided by more than 40% of employers to at least some of their employees. Only 5% of them give preferential loans or mortgages. A fifth offer non-contributory pensions for some of their personnel.

Most significant in this respect is the growth of the company car provision among computer departments.

Among heads of management services and DP managers there has been a slight rise: from 59% to 60% in the former case and from 49% to 51% in the latter.

But chief systems analysts, operations managers and analyst-programmers have been doing much better.

• The high leaving rate and lack of training going on at present could combine to work in favour of established DP staff.

The postal survey, carried out in December 1982 and January 1983, covered a random sample of 350 installations drawn from the NCC's national computer index. Pay details were culled from 6,500 people.

Copies of the full details can be obtained from the NCC, Oxford Road, Manchester M1 7ED.

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In fact, you can save 10% on hardware maintenance costs alone by adding Remote Services.

But the real saving will be in increased uptime and more productive use of your computer.

Remote Services operates 24 hours a day with options like hardware and software remedial maintenance and regular remote VAX system checks.

Not to mention our new high speed communication links.

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You hold the key which must be used to gain access to your computer.

If you'd like further information you could always visit us at Basingstoke.

But it may make more sense to phone us instead on (0256) 56101.

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Of the "chefs", 26% now have company cars, compared to 22% last year; of the operations managers, 19% compared to 9%; of analyst programmers, 16% compared to 9%.

More than half the installations surveyed worked only one regular shift, with 28% working two and only 7% working three. Shift working was overwhelmingly concentrated in the operator and senior operator category.

Average shift payment was 17%, with 14% of employers giving 10% or less and 5% of employers offering 26% or more. For the minority of installations giving a flat sterling rate the average was around £750 a year.

Holiday entitlement improved slightly for less well-paid people—the average was between four and five weeks and gained about a day during the period, mostly at the bottom end of the scale.

Data preparation staff still outnumber all other groups in the industry, accounting for 26% of staff. Operations staff contribute 22% with programmers third at 21%. Newest job title is that of database or network controller which makes up only 1% of the computing workforce; these are the people now most in demand and they are likely to grow fastest in numbers over the next five years.

Operations and data preparation staff will continue to decline in numbers gradually.

Overall, 9% more jobs are expected in two years' time. But managers have failed to take action to prepare for the upsurge in demand. Only just over a quarter of installations have been training new programmers. Leaving rates were slightly faster at 13% than joining rates (12%); but the key specialists were leaving at an even faster rate, despite the general sluggishness of the economy. DP departments now spend around 40% of their total budget on staff salaries.

The postal survey, carried out in December 1982 and January 1983, covered a random sample of 350 installations drawn from the NCC's national computer index. Pay details were culled from 6,500 people.

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• The high leaving rate and lack of training going on at present could combine to work in favour of established DP staff.

## EXHIBITION PREVIEW

# Brand new show with all the right credentials

Margaret Spooner talks to some Trade Show exhibitors

**THE Computer Trade Show will take place for the first time from April 26-28 at the Wembley Conference Centre. The organisers emphasise the quality of visitors rather than quantity, and intend to provide an atmosphere conducive to business undisturbed by milling crowds.**

Visitors to the Computer Trade Show '83 will be dealers, distributors, OEM firms, software Houses, retailers and other sales organisations involved in the computer industry.

Manufacturers of small computer systems, software, peripherals, magnetic media storage cabinets

systems to complete multi-user minicomputer systems.

Bedingfield said: "It's a new show which seems to have the right credentials for addressing the middle market between the small single user and the very large volume OEMs. The marketplace is changing. A few years ago there were mainly large OEMs but now there are many smaller OEMs requiring a higher level of service from the supplier. We anticipate this show will meet that market."

Gresham Lion will be showing its Lyme range of visual display terminals which come in three versions - standard monochrome, monochrome with graphics, and a colour graphics version.

"We decided to give it a whirl", said sales manager, Robbie Robinson. "It's a new show and the only way to evaluate a new show is to try it. The cost of media advertising is high. At the Computer Trade Show, for only a couple of hundred pounds more than the cost of a full-page colour advertisement, you get three days face to face with the people you want to talk to, so it is much more cost effective."

He added that Gresham Lion was looking for large OEMs "which is what the show is aimed at".

Integrated Micro Products was planning to exhibit at the Micromodels exhibition which was consolidated with the Computer Trade Show. "We were geared up for that exhibition so we decided to go to the Computer Trade Show", said Dick Penny, marketing manager.

The company started by manufacturing controllers for discs, but now offers a range of DEC-based products extending from low-cost Winchester and floppy disc

and power supplies will all be sport."

Many exhibitors at this first Computer Trade Show will just be

showing their products for the first time. Tony Bedingfield, commercial director of Baydel includes his company among them. "Basically, you try it and hope for a good response. We tried Computer Trade Show for the first time and were surprised and pleased with the response and have been to every one since."

The company started by man-

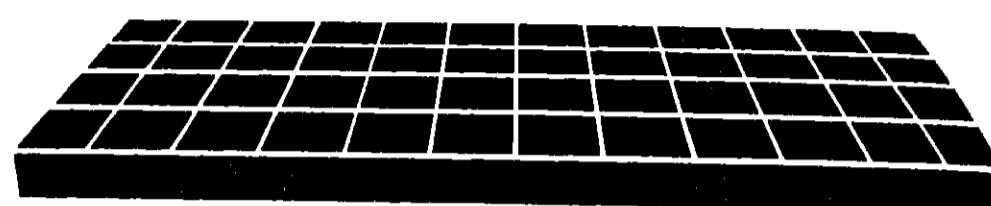
ufacturing controllers for discs, but

now offers a range of DEC-based

products extending from low-cost

Winchester and floppy disc

# The Computer Trade Show '83



The Computer Trade Show '83

## EXHIBITION PREVIEW

# It's the quality, not the quantity that counts

From page 18

Data General and IBM users. The range includes Colorscan 70 which gives Data General users up to eight colours simultaneously, emulations for DEC VT100, VT101 and VT131 terminals with colour graphics facilities, for Data General DG100/200 and DG605/53 with full colour options, for IBM 3275/75, ADDS Regent 25, Hazeltine 1420 and Lear Siegler ADM 3A terminals.

Mellordata has also expanded into printers and markets Oki

Logica VTS and Dynatech Microsoftware.

Logica VTS, one of the Logica companies, was formed in 1976 to research, develop, manufacture and supply office automation and communications systems. Its three main product lines are the 2200 word processor, the Polymer local area network and the Vitesse personal computer. The company has already shown the Vitesse at two previous computer shows, but on this occasion wants to put it before the trade.

Marion Lewis, Logica VTS

marketing operations manager, said: "We have now signed about 20 dealers. We are aiming to complete a network of 50 by the end of June - one has to vet and select carefully to get the right quality of dealer."

Dynatech Microsoftware is

Microline, DRE, Quime, Print Swiss and Datassout printers as well as being the exclusive UK distributor for the Quantex model 7000 series multi-mode printers which can give letter quality word processing or bi-directional medium-speed data processing printing. The company offers nationwide field maintenance for products it supplies and third party peripheral maintenance.

Robocom will launch the Robo 1000, a major upgrade of its existing systems. Managing director Peter Bailey said: "We would like to make dealers aware that these are low-cost computer-aided design machines available for microcomputers and that this area they may like to deal in."

Priced at £445, the Robo 1000 combines a controller and software and will be sold mainly to interface with microcomputers in turnkey systems.

Bailey said: "It dramatically expands the applications areas to which low-cost computer graphics can be put." It will be the main product on Robocom's stand.

Geveke Electronics will also launch a new product at the show. General manager, Tony Beswarick said: "We specialise in the distribution of a full range of peripherals to dealers, integrators and OEMs. We are interested in the show because it is a trade show, the time of year is right and it coincides with the release of a new product." That product is the latest addition to the company's range of visual display terminals,

based in Guernsey. Its sales administration manager, Diana Knot, said: "We have tried selling direct and through dealers, and we feel that the only way to succeed is to get a good network of dealers going for UK distribution."

The two-year-old company, which was called Microsystems prior to takeover by Dynatech, produces program generators and software.

"We are mainly interested in

getting dealers and distributors for our program generator, Codewriter. We have already appointed some area distributors but are seeking more to control the network of dealers." Codewriter is available for the Commodore 8000 and a version for the IBM Personal Computer will be launched at the show. Versions are being written for the Commodore 64 and ATC Sirius computer.

For anyone hoping to relax with a game of space invaders, "We'll charge them for that," quipped Blood, intent on three days of good business.

A very different type of software will be evident on the stand of Microcomputer Games, the sole representative of companies applying computers to fun pursuits rather than business. Microcomputer Games sells board, war and fantasy games and will demonstrate some of them on an Atari 800 and possibly a Commodore 64.

While this may appear diverting in the middle of a sea of business equipment there can be no mistaking the serious purpose behind Microcomputer Games' presence at the show.

Michael Blood, the company's general manager, said: "While it's billed as a show for the business software trade, a lot of business software companies have been

headquarters in a 25,000 square foot factory in Cramerton and Dragon Data has a 50,000 square foot factory at Kenfig, near Port Talbot.

Whether companies continue to exhibit at the Computer Trade Show in future years depends largely on the success of this first event. But success is not entirely quantifiable in terms of cold statistics. There is more to attending such a show than merely generating interest in products or gaining a certain number of sales leads.

Tony Beswarick of Geveke Electronics commented: "We would like to feel that our invest-

ment in the show and the effort we put into it is rewarded. But such a show has a wider importance because the people there are the ones who determine trends in the marketplace. So there is a lot to be gained just from attending and being able to talk to these people."

Robbie Robinson of Gresham Lion mentioned the side benefit of looking at the competition. In evaluating the success of a show, he said: "You get a gut feeling as well as looking at the number of sales leads."

At Peripherals '83 his company gained 60 sales leads and 180 other contacts and was well pleased. Last year at a show which was generally regarded as fairly unsuccessful Gresham Lion had one very large order which made it worthwhile.

In the end it is the volume of business generated which counts. "Normally we would expect about 50 contacts at a show," said Richard Norton of Norsk Data. "At this one we'll be satisfied with 20 because normally we are meeting end users, but this time it will be professionals." And the orientation of the show towards the trade gives it considerable appeal, judging by exhibitors' comments.

If it is well attended the Computer Trade Show could become an essential part of the marketing strategy of companies which supply the computer industry.

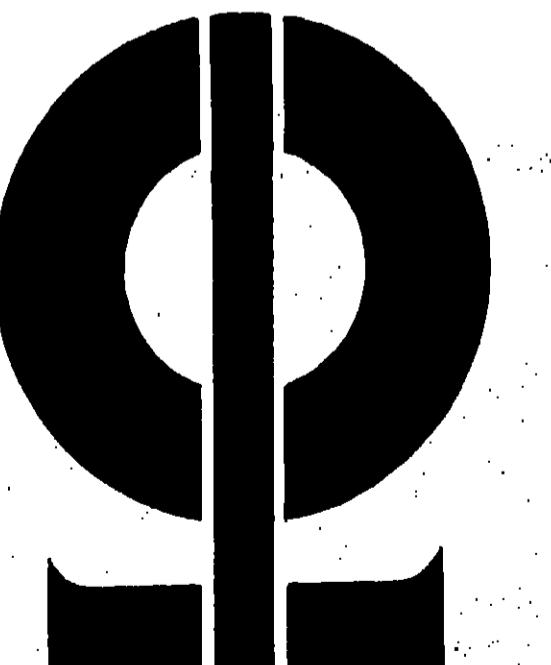
Tony Bedingfield of Baydel said: "There have been several poorly attended exhibitions recently. We hope this won't be one."

His hope is undoubtedly shared by all the other exhibitors while the organisers are sure to echo Beswarick's sentiment: "We are enthusiastic and hope the show will be a success."



BESWICK . . . Show coincides with release of a new Geveke product.

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## THE OEM MARKET

# What car dealers taught the OEMs

While some manufacturers are bypassing OEMs and selling direct to end users, others are beginning to woo them back. Hedley Voysey reports.

## Another software company bites the dust.

'Fraid it's true. On April 21st Cullinane UK Limited slams the doors for ever. To reopen within nanoseconds as Cullinet Software.

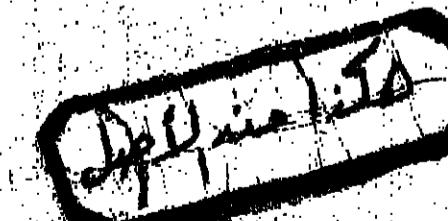
Same company, same people, different name. Different name because different products.

From April 21st we're introducing some remarkable new advances in software. Chief among them being the integrated software "Network." (Hence Cullinet.)

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A package potentially so powerful that, for our competitors, that headline will have an uncomfortable ring of truth.

## Cullinet.



Cullinet Software Ltd., 150 Southampton Row, London WC1B 5AL. Telephone: 01-837 9616. Telex: 893332.

THE motoring world is familiar with the sales techniques used to gain first rate dealerships. The same theatrical style has arrived in the computer market, as the importance of businesses which buy systems for further re-sale grows.

Unlike the motor dealerships sector, however, the majority of re-sellers of computers employ large numbers of staff to "tailor", "customise", "integrate" or otherwise transform the shell offerings presented by the manufacturing source.

To this extent the business of acting as a middleman in computer dealings by adding value most closely resembles the commercial vehicle coach-building trade, as in most cases the finishing stages added to the shell are very significant to the final user.

Where the systems houses supply a business applications product, however, there is no doubt that the art of wooing dealers is getting the full presenter's treatment so familiar to the vehicle trade.

The latest (but not the first) emanation of this style comes from Perkin-Elmer (PB) with its partnership plan. The glossy brochure which is intended to interest dealers in attending a seminar on the PB plan for supporting dealers is worded in the breathless style of "hit-and-run" copywriters searching for impact.

The deal is both "unique" and "mouthwatering" and the prime software product is "so choc-full of goodies" that it enables business applications to be produced in a fraction of the time - "and that's just a start".

On the other side of the coin there is a simple realisation among all systems houses that times are changing and that several major equipment makers are beefing up

their direct sales teams.

In theory the business done by these sales groups is effected with major accounts and actually improves the sales in other accounts because it creates a climate of general acceptability for the range.

That is to say it is meant to provide a surge of appeal which makes systems houses acceptable to potential clients anxious to deal only in the "first division" of the computing league.

Stuart Haughton, who is responsible for volume channels of sale for Digital Equipment, is

turning into loss sustaining nightmares when mistakes in tendering occur. So, any drive for additional distributing outlets, such as that mounted by Perkin-Elmer, meets with the inertia built into the medium sized systems houses because of the drag on profits created by investing in "getting to grips" with a new range of systems.

Pressure is also on systems houses to adopt a different level of systems integration by dealing with board-level computers and powerful packaged versions of machines from semiconductor sources. An example of the latter is the appeal of the Zilog 8000 while the proliferation of multi-user systems based on mixtures of 8-bit and 16-bit micro chip sets continues.

Pressure is also on systems houses to adopt a different level of systems integration by dealing with board-level computers and powerful packaged versions of machines from semiconductor sources. An example of the latter is the appeal of the Zilog 8000 while the proliferation of multi-user systems based on mixtures of 8-bit and 16-bit micro chip sets continues.

There is a simple realisation among all systems houses that times are changing and that several major equipment makers are beefing up their direct sales teams,

quite clear that "resellers gain most from dealing with a supplier using a foundation of design and support that is of the highest standard."

It is equally clear that Digital Equipment views many end-users as potential direct sales simply because the newer mixes of hardware and software, such as seen in office support systems, demand a good and sustained contact between ultimate user and ultimate supplier.

Needless to say, the factors at work in changing the allegiances of systems houses towards main equipment suppliers are not as simple as this introduction would suggest. It is not just that the established suppliers - to whom Digital Equipment and Data General - are getting greedy in the office automation market and therefore squeezing out some resellers.

On the other side of the coin there is a simple realisation among all systems houses that times are changing and that several major equipment makers are beefing up

tions per second" according to Brian Hanley, marketing boss for Perkin-Elmer, there are also financial incentives including advertising support, four months for phased payments and initial "start-up" systems at very hefty discounts.

For systems houses and other resellers there are difficult choices ahead. The largest firms can find the manpower to get under the skin of more than one range of machines; very likely handling four main sources of supply, but the investment in doing this is on a scale which frightens the bookkeepers in smaller firms.

Although there are financial inducements to ease the burden of acquiring know-how about yet another set of hardware and software options, these gains are dwarfed by the cost of the time spent in being certain about performance capabilities.

It must be remembered that fixed price tenders for jobs can

gramming - which in terms of results means imitating instructions sets, automatic inclusion of communications software and aids to distributed database design.

If to all this is added the NCR dealer lists for the personal micro sales - the Decision Mate V - it can be seen that a general maturing of relationships is taking place all round the industry.

Data General also has a capability for appealing to systems builders in a number of guises, for while the major selling drive rests with the 32-bit machines, from the cheap MV 4000 upwards, the firm still sells packaged systems based on the 16-bit Eclipse instruction set and its component level products are sold through distributors for chips in the normal way.

A major account which shows what can be done when supplier and systems firms all pull together is probably in evidence in parts of the Grand Metropolitan Group for Data General in collaboration with Data Logic and Leasico.

Leasico provides another spotlight for trends in reselling machines in that it has a major deal with Grundy for the Newbrain. It will be interesting to see if Grundy can emulate the Altos track record in the US, where it rivals Vector Graphics in being known under its own name and also via resellers.

While the general tone of Digital Equipment's pronouncements suggest that there is room for all firms adding significant value to basic hardware and software combinations, the truth is that many applications believed to be very specialised, a few short years ago, are now regarded as a problem in managing the configuration of the software tools and a dash of seasonal expertise.

John Remmington of Modcomp's industrial applications arm claims that "for many process based applications, the systems house can adjust for specific input and output needs and connect to optimisation models, while our package provides the ready-made core of processing software" and this tends to leave Modcomp looking for specialists with instrumentation expertise and similar skills.

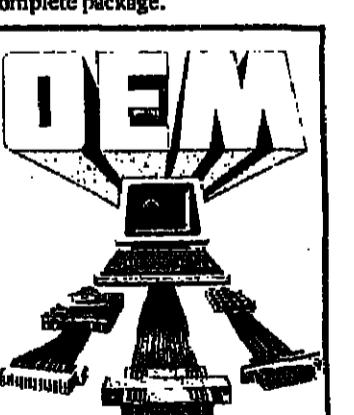
The industrial market has had a long acquaintance with Hewlett-Packard (HP) and the links are not likely to be weakened by current changes. The support for agents of HP equipment seems to be conventionally organised, but certainly embraces incentives for software as well as hardware.

There is little doubt, however, that large areas of office automation growth and many sites examining distributed processing designs will be served by Hewlett-Packard staff operating in the front line of negotiations.

If fundamental change could be judged by the amount of splash it caused, then it would seem right to observe that among 32-bit machine suppliers, there was indeed, a struggle for the allegiance of industrial expertise on offer from systems houses, with some of the contenders already mentioned here and others that are obvious, such as Gould SEL, and Harris, Computer Technology and packaged versions of the systems based on Intel and Motorola chips are left to fight it out with Digital and Data General in the 16-bit sector.

But the truth is most probably that the splashing sounds merely mark the struggle for a peripheral sector of the market, while the central concern is to stop the battle between IBM and Digital Equipment from overshadowing every other policy decision made in the market - especially by large users.

IBM quarrels vociferously with every type of bus structure based computer, except at the smallest level, while Digital Equipment calmly does out variants of its 32-bit bus design, its Q-bus and its Unibus. Most likely Digital does this at each discernible level of systems building, from the chip set to the complete package.



To distract attention from the dominance of these two giants in policy determination the systems houses are turning more and more to policies based on Unix as a bonding technique between machine variants. As it happens the availability of Unix is now so widespread that many systems exploiting the nearer features of its design can almost be said to be "portable" without putting a tongue in a cheek.

The resellers of computers have discovered the danger of undue dependence on popular hardware architectures, since the supplier of these can move in to take over sectors of the market, almost at will. It remains to be seen whether dependence on operating systems design features offers a better bet for resellers of hardware.



HANLEY... "There are also financial incentives for re-sellers."

Boris Sedacca explains why the original equipment manufacturer isn't the *original* equipment manufacturer

# Why there'll always be a role for the OEMs to perform

To people outside (and some inside) the computer industry, the term OEM is confusing, particularly as it does not refer to the original equipment manufacturer itself, but to its agents, distributors and systems builders.

The role of OEMs is changing all the time, but their origins can be traced back to the early days of the minicomputer when manufacturers like Digital Equipment and Data General sold processors to which other peripheral manufacturers' printers, terminals and disc drives could be connected.

A customer could of course buy peripherals from the minicomputer manufacturers but he would normally be paying over the odds because their strength lay in their specialisation on processors. In fact many minicomputer manufacturers buy OEM themselves if they want to offer total system configurations.

But there will always be a role for OEMs, as the example of CPU Peripherals shows. The company took over Hazeline's UK operation last October because as a single product line vendor/manufacturer it was finding it difficult to keep going with its overheads.

NCR also appears to be preparing an indirect foray into the IBM plug-compatible market. Its recently-launched 32-bit single-chip processor, the 9300, will be available with the IBM System 370 instruction set implemented in programmable read-only memory.

**'Big users know they can buy kit outside Digital Equipment, but they do not want to be told "you will have to talk to our distributor" when they want to place an order — we are the distributor and we take the order.'**

"Off-shore manufacturers often adopt a policy where they set a minimum order level and cut themselves off from good margins at the systems builder level who want a simple deal and who do not want to commit themselves to large purchases. They normally want to try out three or four terminals to begin with," says Mike Ayres, CPU Peripherals.

"Big users know they can buy kit outside Digital Equipment, but they do not want to be told 'you will have to talk to our distributor' when they want to place an order — we are the distributor and we take the order."

Ayres claims that since the takeover, turnover for the Hazeline business, which stood at £1.3 million a year, has increased by 50%.

"Some manufacturers, like Epson, for example, are going into their own local operation, but I think enlightenment will soon dawn. If a customer does not want a printer, the OEM distributor can sell him something else like a terminal or a disc drive. The sales visit is not wasted. In this way, the OEM has more strings to his bow."

One current development in the OEM market is its encroachment into IBM territory. The plug-compatible manufacturers first attacked the mainframe end of the market with peripherals and then with processors, but now the small systems end is being flooded with numerous IBM Personal Computer look-alikes.

Moving upmarket, a little into IBM System 34 and System 38 territory, once known as the General Systems Division, Decision Data believes this to be the fastest growing market and is aiming for a slice of IBM's peripherals business.

According to Craig Ogilvy, sales and marketing director of Decision Data, there are currently around 100,000 System 34s and 38s installed worldwide. The company says it earns 60% to 70% of its revenue from the IBM GSD mar-

ket. The rest comes from maintenance and the sale of punch card equipment for which the UK market is small in the UK but still relatively buoyant in France.

Decision Data was set up in 1979 by four ex-Univac engineers who designed and manufactured 80-column punch cards sold OEM to Honeywell, Burroughs and ICL and also direct to end-users. The company got its first taste of IBM experience by hooking punch card equipment up to IBM System 360 processors and then began making 96 column punch cards for IBM System 38 which gave it a toehold into the GSD market.

As punch cards began to go out of fashion in favour of video terminals, the company's fortunes dipped in the mid-70s before picking up again with the launch of IBM-compatible terminals and printers for the GSD market in 1980.

NCR also appears to be preparing an indirect foray into the IBM plug-compatible market. Its recently-launched 32-bit single-chip processor, the 9300, will be available with the IBM System 370 instruction set implemented in programmable read-only memory.



WAINWRIGHT... remains loyal to Texas Instruments, despite the lure of the IBM OEM market.

to make it compete against IBM's 4300 series midrange mainframes.

However, Phil Howard, NCR product manager for the 9300, pointed out that this would only be available at the chip set level for systems builders who wanted to go for the IBM plug-compatible route.

So although the IBM market presents some potential for OEMs, many will prefer to stick to what they know best. One such company, Geest Computer Services, has remained loyal to a manufacturer which is very much in the second division as far as minicomputers go — Texas Instruments.

Geest has been selling Texas kit since 1977 and has notched up 200 installations, mainly in the UK,

therefore we have to move upmarket with it. A £45,000 system however, is still competitive against networked micros.

"We happen to be in both markets. The advantage of a micro is that users can upgrade from a single terminal and floppy disc rather than having to put a lot of up front on a minicomputer system."

"The new 990/10A will enhance

the power of the machine by about 60%. Competition from the 16-bit micros against the machine at the bottom-end, that is in the £14,000 price bracket, is quite intense,

looking for a complete package including customer support which we provide."

UCL also provides information of the type provided by the major manufacturers to their direct sales forces, such as competitive information, technical bulletins, benchmarks, and order news.

"We are planning a serious move into Europe towards the end of the year in conjunction with Ultimate. We already have installations in Holland, Belgium and France, and with Honeywell's operations so firmly established in Europe for things like engineering support, we are in an ideal position to start marketing there."

that Peachtree does not sell to end users.

"We do sell to corporate users of micros — the MSA type of customer moving into micros. But they are almost like OEM sales anyway because they are multiple sales," explained Hale.

Hewitt at Micro Focus commented that such sales were extremely important from the point of view of product development.

"When you are selling through distributors it's very easy to lose contact with your end users — you don't know who they are. We try and maintain a local base of customers to provide feedback directly. We need a proving ground to build up experience and insight into the product so we need to build our own customer base," he said.

Hale agreed that this was important and felt that Peachtree could achieve this through its contracts with its dealers and its corporate "end customers".

"We have tremendous difficulty with the term OEM," commented Peter Hewitt, marketing manager of Micro Focus, a company specialising in Cobol compilers and programme productivity aids.

"It has always meant systems houses but I can see how it is becoming relevant to our business," he went on.

"The great advantage to us in selling to other software houses and microcomputer manufacturers is in distribution. There is no way we could serve a world market with only 75 people. But by extending our products into other companies we have shouldered the burden of responsibility for operating system development."

There are not a great number of independent operating system suppliers in the mainframe market — and those there are operate in a very specialist market.

The advantages of buying an established software package for distributions are numerous. Apart from the obvious advantage of not having to go through the traumatic business of actually developing the package themselves there are marketing and support advantages.

"We undertake to do much of the marketing for our customers."



# How the term stretched to software

Phil Manchester on how hardware selling techniques crossed, inevitably, over to software

THE recent past has seen an unprecedented rise in the demand for

software.

It also has a significant number

of customers in the software house

market, using the CIS Cobol pro-

gram to develop applications soft-

ware including Action File and

Sheffield Software.

It also includes Peachtree, the

micro software subsidiary of

the giant Management Science of

America (MSA) software package

company. MSA was one of the

companies that developed out of

the unbundling decision in the late

1960s and has worked its way to

the top of the heap as far as inde-

pendent software suppliers are

concerned.

Peachtree, too, is in the OEM

software business.

Managing director of Peachtree,

John Hale, agrees with Hewitt's

comment about distribution.

"We have to do it because of the

sheer impossibility of handling the

scale of transactions. The

microcomputer business is an

order of magnitude bigger than

either the mini business or the

mainframe business. Selling in the

conventional way is impossible

from the sheer logistics of

software."

With one exception, Hale said

itself Peachtree's Hale.

"This includes TV advertising which is due to go out this month and newspaper advertising."

Peachtree also spends a lot of its

time on providing training facil-

ties for dealers and also gearing its

development to the requests of its

dealers.

"A distributor would be foolish

not to take advantage of the mar-

keteting support we offer," said

Hale. "But we would not exclude

situations where a customer wants

hardware. Whereas in the

hardware market many OEM cus-

tomers will apply their own mark

to the product, in the software

market there are positive advan-

tages to keeping it very much in

line with the original source.

"A distributor would be foolish

not to take advantage of the mar-

keteting support we offer," said

Hale. "But we would not exclude

situations where a customer wants



HALE... "The micro business is an order of magnitude bigger than the mini or the mainframe business."

our products to build his own."

Hale sees the parallel with

hardware OEM business very

much in the way that the product

is despatched from Peachtree.

"We ship master tapes and

master documentation and the dis-

tributor handles the copying. We

provide a licensing arrangement

and benefit from royalties."

Another problem that can occur

is end customers looking for

support from the originating com-

pany."

"We get people phoning us

direct," said Hewitt. "This hap-

pened a lot with the Sirius users

who had an early version of one of

our products. But you can see the

logic in it. We ship the product out

to California, 6,000 miles away, it

is repackaged and sent back —

probably to an installation round

the corner."

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### THE OEM MARKET

## Network vendors face unique OEM problems

Phil Manchester explains how local area networks got in the OEM world

EVER since Xerox, Digital Equipment and Intel announced their unprecedented joint venture into distributed computing, otherwise known as Ethernet, in 1980, local area networking (LAN) has been a hot subject.

If you forget the "local area" part for a moment, the subject of networking has been around in one form or another for about a decade and has its roots in the move toward distributed computing back in the 1970s.

What makes Ethernet and its rivals different is that it is aimed at providing a general purpose conduit for internal communications with the emphasis very much on the general purpose.

What the trio, Xerox-DEC-Intel, sought to establish was a de facto industry standard - much in the same way that IBM's 360/370 architecture has become established as a standard for machine architectures.

This has obvious advantages to the chief protagonists (the LAN two in this case) but it also provides opportunities for other suppliers to jump on the bandwagon. The establishment of industry standards is a two-edged marketing sword.

Yes, you may well get your particular philosophy adopted as the only true path, but at the same time this path becomes a fixed target for the competition to snipe at.

IBM found this with the 360/370 machine architecture (among a number of other things - 3270, 2780 terminals to name a couple). As soon as the architecture be-

came stage in the game. "The manufacturers are using you so if they find another way of doing it they can easily drop you," commented Martin Waldron, marketing manager of Network Systems Corporation.

"We had an example recently where we had insufficient control over the deal and lost contact with the customer," he went on.

NSC is one of the earliest network pioneers. Its Hyperchannel product is aimed chiefly at connecting mainframes together rather than providing a full general purpose LAN Ethernet style.

Started in the US in the mid 1970s, NSC took over its European franchise operation from distributor Tescdata a year ago.

"We are in a unique position at the moment," Waldron explained. "We are the only truly independent supplier of networking hardware and software which means that we can deal with all of the computer hardware manufacturers."

Waldron pointed out that this position gives NSC an edge over companies that have sworn allegiance to a particular philosophy - say IBM or DEC.

"We provide a means whereby all manufacturers can get their machines to communicate with each other without having to adopt a specific line," he added.

He suggested that a networking philosophy based on one manufacturer's ideas would prove unacceptable to another manufacturer for both technical and political reasons.

The vendors of networking styles face a set of problems no other OEM has

come faced little companies like Andraitx, Itel and Magnuson came along and did the same job much better and much more cheaply. More importantly, the hungry young Japanese computer industry also took advantage of the industry standard to model their first computer range.

Copying a single machine architecture - especially one as well established as the 360 now is - is relatively easy in comparison with modelling something as vague as a networking philosophy.

IBM's System Network Architecture, for example, has undergone several radical changes since its first announcement nearly a decade ago. In those days centralised, hierarchical control - as befits an organisation such as IBM - was the thing. Nowadays, a more "democratic" approach has become the vogue and manufacturers have become more conscious of the idea of open systems following the moves by the international standards bodies to create a universal networking standard.

Inevitably, this means that a whole new sector of the industry is beginning to emerge - that specialising in the art of networking. So there are now many number of Ethernet look-alike systems, token passing ring networks, "Cambridge" rings and so forth.

These companies are currently involved in a unique marketing exercise where the target is no longer the end customer, but other suppliers. There are strong precedents for this type of operation in the peripheral business - suppliers of 3270-type terminals, for instance, are manyfold, as are suppliers of disc store.

But the vendors of networking styles face a set of problems which other OEM-style business has.

They are dealing chiefly in the realm of ideas and, as a number of their potential customers are well aware, one set of ideas can easily be exchanged for another at this

stage. "The manufacturers are using you so if they find another way of doing it they can easily drop you," he went on.

Keen's software subsidiary company, Atlantic Software, is itself an OEM customer of a number of US software houses and is building multi user, Unix based systems around the Omnitel for accountancy applications.

"You could classify us as both an OEM supplier and as a primary source," Taylor commented.

Where NSC sees its networking product as a means for linking mainframe and mini machines together, Keen sees the Omnitel as a means of extending micros into mainframe and mini applications.

In other words, with an Omnitel and a bunch of micros connected to a large disc store, you can pretend that you have a mainframe with a bunch of terminals on it.

into vertical markets. Estate Computing, based in Lincolnshire, is using the network to build an estate agent's package."

Keen's software subsidiary company, Atlantic Software, is itself an OEM customer of a number of US software houses and is building multi user, Unix based systems around the Omnitel for accountancy applications.

"You could classify us as both an OEM supplier and as a primary source," Taylor commented.

Where NSC sees its networking product as a means for linking mainframe and mini machines together, Keen sees the Omnitel as a means of extending micros into mainframe and mini applications.

In other words, with an Omnitel and a bunch of micros connected to a large disc store, you can pretend that you have a mainframe with a bunch of terminals on it.



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## COMPUTERISED EXAMINATION RESULTS

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or fail gradings — and as a result did not qualify for university. The West Midlands Examinations Board thinks it has a fail-safe, and sympathetic computer system. The Board's WILLIAM BROWN describes how the system works in practice.

# Pass with distinction for exam board's sympathetic system

A COMPUTER has no heart, but it is fundamentally important to the operation of our examinations. So it has to be used in a way that enables us to discharge our responsibility to the candidates whose level of attainment we seek to measure and to their teachers.

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No examination system of the kind we have to use is free of error. At the same time, having built up a system over years, we have great confidence that few, if any, discrepancies can arise through computer processing and go undetected.

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The size of the task faced by West Midlands each summer is a total of 435,000 subject entries.

Subjects have a variety of components including written scripts and multiple-choice answer sheets. The latter category comprises about 100,000 subject entries with 50 questions each on average — a masking task for the optical mark reader and the computer of 5,000,000 answers.

In addition to results processing, the computer system is used to UCC's mainframe. This allows immediate access, manipulation of data and enquiry facilities on the premises with provision for large-scale processing and print runs to be done at the bureau.

In terms of hardware, the Board maintains a Longines Data 400 mark reader with a Mohawk Data Sciences MDS 21/40 minicomputer with 96K memory, four diskette drives and a 2141 System printer.

The system is then linked to UCC's Univac 1108 by dedicated lines.

The proximity is important. In the early days we used a bureau in the south, but as the system grew and particularly during the summer high-peak load there was a loss of intimacy between the com-

## Smart, Low Cost and Compatible

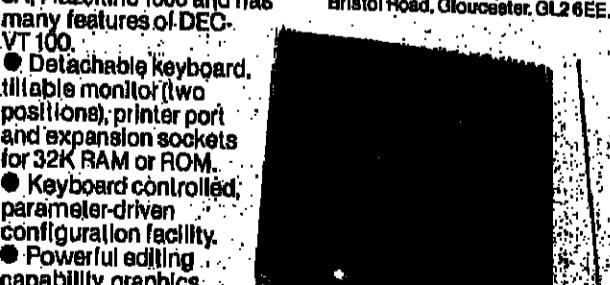
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\*\* Recommended Retail Price

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## Systems Analyst

Norwich £11,000 + £500 Allowance

Unilever Computer Services Ltd is a company within the Unilever group offering computer development and processing facilities to a wide range of clients both within and outside the group. A recent £2M investment in hardware has resulted in the installation of an IBM 3083B, and a NAS 6650, 7031 at the new custom design computer centre at Woking. The development team at Norwich will be expanded to provide systems house facilities to the centre and will be handling a wide variety of applications. As well as IBM orientated developments the group is currently engaged on projects featuring a PDP 11/44 and Sirius micro computers.

A minimum of 2 years analysis experience is required from a previous technical background preferably in an IBM or DEC environment. Experience in any of the following will be an advantage: Online/database eg CICS/DL1, Production/manufacturing systems, mini computer as stand alone or intelligent terminal (pref DEC).

The Systems Analyst will work as part of a project team or may project lead the development of systems as appropriate. You must be seen

motivated and capable of working under your own initiative in a client environment. On some occasions you may be involved in travel within the UK. The development group is based in Norwich which offers low cost housing and is within reach of the Broads and Coastline. The usual large company benefits will be offered to the successful candidate e.g. pension scheme, free BUPA, car allowance, re-location assistance etc. For further information and an early interview phone Knight on 01-491 4706, quoting Ref: YY/112.



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Our client is a large and diverse group of companies. Its main area of activity is in retail and wholesale distribution. A comprehensive range of computing facilities is used to service the variety of applications for this major division. A Pricing system is currently being implemented on a DEC PDP 11/70 and subsequent projects have been identified, including a new Product Promotion system. The division now requires an ambitious programmer able to meet the following criteria:

- \* Good knowledge of RSTS/E
- \* At least eighteen months experience of BASIC + or BASIC 2
- \* The potential to progress into a systems analysis role
- \* Bright, reliable, self-motivated and able to form effective relationships with users.

If you are looking for a challenge and an environment where you can make a real contribution, then our client can present the ideal opportunity. The starting salary is c£10,500 and additional benefits include Subsidised Restaurant, Staff Discounts and many more. The West of London location has ample parking facilities and is close to all forms of Public Transport.

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## Programmers for IBM System 38

Kent Coast

to £10,000

A measure of a tour company's success is related to the high number of repeat holiday bookings received each year. Saga Holidays PLC have achieved this by providing a high quality service to its customers and they currently sell nearly a quarter of a million holidays every year. Their business in recent years has been further enhanced by the ability to offer information to all customers expeditiously and reliably. Their computer installation comprises two IBM System 38's supporting sixty terminals. They are designing a comprehensive integrated reservations and booking system, incorporating customer and marketing application areas. To meet the ever increasing demands of their Data Processing strategy, Saga Holidays are currently seeking to recruit three additional programmers to supplement their existing development team.

SAGA PLC

01-491 4706  
24 Hours

HUNTERSKIL  
The Hunterskil Group

## Data Processing Manager

Salary: Circa £14,000 per annum plus company car plus other benefits

Location: East Kent Coast

Our client, a manufacturing company based on the East Kent coast, now wish to recruit a Data Processing Manager to head up their well-established Computer Facility. The company is one of the best known in its field, and its established products are household names. The innovation of its management has also created a wide range of new products that are achieving a significant market penetration.

The position of Data Processing Manager is a very important one within the company structure and reports to a main board director. We are looking for someone who has a sound technical background in a systems and programming environment over a period of at least eight years and feels confident working at a senior level. We would like to meet a "thinker", not only in computer and business terms but also in people skills, who will welcome the opportunity to run "his/her own show," and will appreciate the flexibility of attitude and willingness to adapt quickly to direction from senior management.

mutually beneficial. You will probably be in the age range of 30 to 35 and will have a broad understanding of modern computer technology. You will also be looking for your first senior management appointment, and will be attracted to this position because it will offer you considerable scope for personal and technical development. You will also welcome the opportunity to make a significant contribution to company development in a stimulating environment.

The East Kent coast is one of the few parts of Southern England where housing prices are still reasonable. This, combined with the job opportunity and negotiable package, makes this position exceptionally attractive.

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BOSB (3202)

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The position interfaces with internal and external personnel, particularly equipment suppliers who will be asked to meet performance criteria based upon your benchmarks. The abilities therefore to communicate both verbally and in writing are equally important as your technical and supervisory skills.

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(3286)

## Programmer/ Analyst

The Science and Engineering Research Council is currently reviewing its administrative computing requirements and expects to purchase a number of software packages to meet them. In connection with this the Daresbury Laboratory, one of the Council's major laboratories, situated in the North Cheshire countryside is seeking a programmer/analyst for the Applications Group of its Computer Systems and Electronics Division.

The Laboratory provides major facilities for scientific research undertaken by University research workers from this country and abroad. The computers at the Laboratory include NAS 7000, GEC 4000A, VAX and PDP 11s.

The successful applicant will assist in implementing the packages, in developing links between them and existing systems and in the provision of programming and database support.

The Applications Group supports a wide range of scientific and administrative databases on several different computers and opportunities to participate in these projects will arise.

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CLOSING DATE: 28th March 1983

For further information please write to or telephone

Dr. M. Elder on Warrington (0925) 89000 Ext 360.

Application forms may be obtained from and should be returned quoting reference number DL/809 to:

The Personnel Officer  
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Application forms and further particulars may be obtained from the Personnel Officer, Highland Health Board, Grey House, 17 Old Edinburgh Road, Inverness, IV2 3HQ, and should be returned not later than 6th May, 1983.

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12 months' + assignments April, May, June  
Analysts with IMS and commercial systems experience  
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SPF, MVS experience  
Programmers - Mark IV, ADF, APL, SAS or FOCUS experience  
Systems Programmers - IMS DB/DC, VTAM, MCP, MSNF or  
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You should have in-depth experience of floppy and Winchester disk technology, ideally with the additional experience of machine code and/or assembly programming, and the ability to design hardware and software required to operate disk products successfully. Ideally, you will also have 8085 and Z80 microprocessor experience, a knowledge of standard printer interfacing techniques, and familiarity with matrix, daisy-wheel and line printers.

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As a DRG Field Service Engineer, within an assigned geographic territory, you will be responsible for promoting good customer relations, customer support and service, on-site fault diagnosis and repair, and preventive maintenance. As a Senior Field Engineer, your additional responsibilities will include providing technical assistance to other engineers.

You should have sound experience of field service on mini/micro computer systems and peripherals, a good basic understanding of digital electronics and the ability to work to chip level.

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As a DRG Bench/Commissioning Engineer, you will be responsible for in-house fault diagnosis, repair and overhaul of company products, test equipment and PCBs to component level, and other technically related functions. Also you will give assistance with the installation and commissioning of computers on customer sites throughout the U.K. You should have a good basic understanding of electronics and have experience of diagnostic procedures and test equipment.

For further information, or to apply for one of the above positions, all of which carry a competitive and comprehensive salary and benefits package, telephone me, Digby Dyke, on 0905 611512 during office hours, or 0645 3210 evenings and weekends, or write to me at the address below.

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01-407 2531



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**OPERATING SYSTEMS SOFTWARE SPECIALISTS.** To select, install, maintain, and monitor operating system software in a large-scale, IBM-based facility center with software including, (i) VM/CMS operating system, (ii) VSI as guest system, (iii) performance-monitoring facilities, (iv) TP subsystems, including DSCSN and VCNA under VM, TCAM and VTAM under VSI, and software in the 3705 communications processor such as NCP, NTO.

The successful candidate(s) should have (i) university degree or equivalent education, (ii) a minimum of five years' experience in any two of the above software areas, (iii) experience in large-scale system development or maintenance, using high-level programming languages, (iv) exposure to large-scale data-base management systems, such as IMS, Model 204, ADABAS, or others of similar sophistication, (v) demonstrated ability to diagnose and analyze system faults in a logical manner, (vi) demonstrated ability to work independently, and to "multi-thread" unrelated tasks while maintaining perspective on relative priorities.

Strong experience in IBM teleprocessing subsystems software is highly desirable.

**PACKAGE SOFTWARE SPECIALISTS.** To select, install, maintain, and monitor application software packages operating in large-scale, IBM-based facility center, including Model 204 large-scale DBMS, FOCUS DBMS, SAS statistical analysis package, AUTOTAB financial analysis package, and others. Work includes installation and maintenance of software packages, testing and introduction of new releases, system operation, and trouble-shooting, monitoring and tuning; providing expert consultation to users on the suitability, cost-effectiveness, resource requirements and other related aspects pertaining to the use of the package software systems.

The successful candidate(s) should have, (i) university degree or equivalent education, (ii) first-hand experience with large-scale IBM computer operating system operating under VM/CMS and OS environment, (iii) experience in large-scale system development or maintenance using high-level programming languages, (iv) demonstrated ability to diagnose and analyze system problems in a logical manner, (v) demonstrated ability to communicate effectively with end users and management, (vi) demonstrated ability to work independently, and to "multi-thread" unrelated tasks while maintaining perspective on relative priorities.

Current working experience with Model 204 or FOCUS is highly desirable. The World Bank offers a competitive salary and benefits package. The positions are based at the Bank's headquarters in Washington, D.C. Please send a detailed curriculum vitae, quoting reference No. 3-3-UKG1002 to:

**The World Bank**  
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1818 H Street, N.W. Washington, D.C. 20433, U.S.A.

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It is envisaged that your administrative, technical and communication skills would have been gained from several years computing experience, at least two managing a substantial mini or mainframe installation, that has provided multi-user, interactive teleprocessing or timesharing services.

If you feel your skills are sound and you would like to succeed in such an interesting and demanding position, please contact Roger Dorricott on 01 935 0671 (24 hour answering service) or 01 870 0462 evenings and weekends 7.00-9.00pm. Alternatively submit a brief Curriculum Vitae to our London office.

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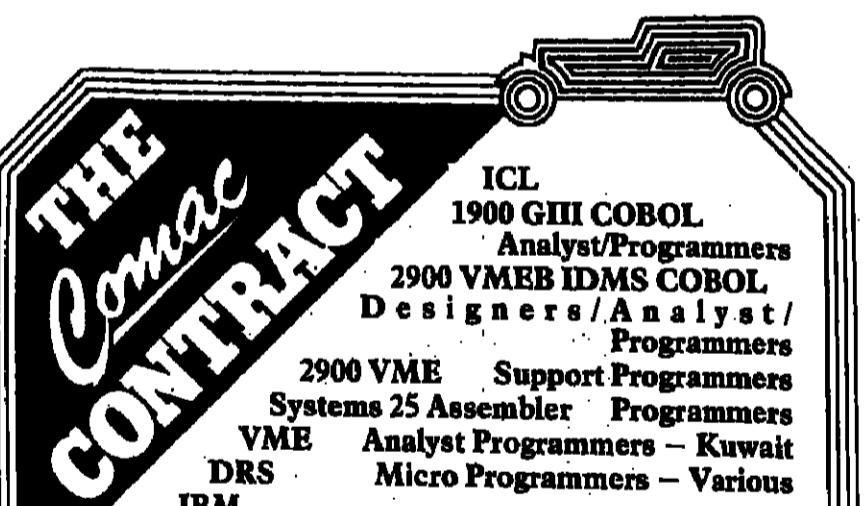
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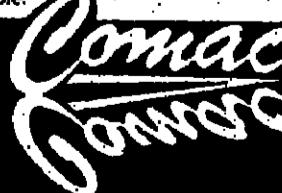
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**Programmer/Analyst**

Reporting to the Senior Programmer/Analyst you should have a degree plus at least five years' programming experience and the ability to program in IBM JCL, Assembler, COBOL, PL/I and be familiar with retrieval techniques, Text processing and Database operations. DLM13/2

**Programmers**

Reporting to the Senior Programmer/Analyst you should have HNC or equivalent in computer studies subject, several years' programming experience gained in large Database operations and the ability to program in several of the following: IBM JCL, Assembler, COBOL, PL/I. DLM13/3

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c£12,000 London

Based in the West End, our client is one of the most highly regarded retail organisations in the UK.

They now need an additional Systems Programmer to assist in the installation and maintenance of their DOS/VSE operating systems on their twin IBM 4331-4341, and to provide technical support to their DP units.

They are looking for someone with at least 2 years experience in a similar environment and any experience of CICS DL1 VTAM software would be an advantage. The company offer excellent prospects and benefits.

**CTR**  
Computer Technology Recruitment Limited

Call Hugh Macer on 01-734 9723, or 0908 583147 evenings and weekends.

**ICL Analyst Programmer**

£10,000 to £10,500 Western Home Counties

An additional Analyst/Programmer is needed to join a project team engaged on the development of a system incorporating interactive and distributed processing facilities (DRS 20's) based on an ICL 2900.

Candidates should have a sound ICL COBOL background and must have on-line systems experience. The project is in its early stages and experience of all aspects of development from analysis to implementation is therefore desirable. Liaison with the user is well established but the ability to maintain good relationships with user departments is obviously important. Opportunities for further development in the DP department of this major international company are excellent.

Call Richard Nash on 01-734 9723, or 01-997 2633 evenings and weekends.

**Cobol Programmer**

to £9,500 Berks

A large international company based in Maidenhead that is currently undergoing a major update of their systems, now need an additional COBOL programmer who will be exposed to the development of a wide range of commercial systems.

The company has just upgraded its computer installation to HP 3000 equipment that supports its on-line and database systems within a distributed network environment.

They are looking for someone with at least 2 years mainframe COBOL experience ideally gained in a fast moving commercial environment. Experience of HP equipment, whilst a distinct advantage, is not essential.

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**Burroughs Sen. Programmer**

£8,000+ Surrey

Recognised as world leaders in graphics communications, our client is now looking for a Senior Programmer to help develop new commercially orientated systems on their recently upgraded Burroughs installation.

This is an ideal opportunity to become an integral part of their team at an interesting stage of their systems development.

You should have at least 2 years COBOL experience on Burroughs medium system and, preferably, knowledge of on-line and database techniques.

Call Hugh Macer or Jane Emmanuel, on 01-734 9723, or 01-467 8566 evenings and weekends.

**Programming Team Leader**

£12,000 West London

An international entertainments organisation is now looking for an ambitious professional, ideally in his/her late 20's to take charge of a team of 3 programmers.

The technical environment comprises of two IBM 4341's under VM and DOS/VSE, utilising COBOL, command level CICS and CMS, among others.

As well as a high basic salary, company benefits are excellent so if you have a minimum of 5 years COBOL with at least 2 years in CICS...

Call Richard Nash on 01-734 9723, or 01-997 2633 evenings and weekends.

**Analyst/Programmer (BASIC)**

£10,000 Middx

An opportunity for an Analyst/Programmer to join in on the development plans for a leading hi-technology company. You will have 2-3 years or more in DP with a sound knowledge of BASIC, you'll be working in a commercial environment, preferably with a working experience of DEC.

My client's development is on VAX 11/750's. This opening within one of their project teams will undoubtedly provide a challenge, job satisfaction and they will reward you with an excellent remuneration, relevant training and career prospects.

Call Clive Sexton on 01-734 9723, or 01-399 9725 evenings and weekends.

**Analyst/Programmer PL/1**

£8,500 to £10,500 Surrey

One of the UK's largest and most successful international broking organisations are undertaking long term strategic development of their systems. They now require an ambitious PROGRAMMER, with at least 18/24 months PL/I experience who is looking to move into design or analysis.

You will join a small team dealing with enhancements of existing systems leading to the opportunity to move onto major developments of distributed on-line systems using WANG VS and TOTAL database. The DP services are supported by large mainframe running under VM utilising CICS/SHADOW and TOTAL database. Excellent benefits and prospects are offered.

Call Hugh Macer on 01-734 9723, or 0908 583147 evenings and weekends.

**Systems Designers**

£10-£15K West Sussex

We are one of the country's leading financial institutions with sophisticated computing facilities occupying two computer linked installations. The configuration includes an IBM 3081 operating under MVS SP 1.3 supporting an expanding 800+ terminal network using IMS as its DB/DC system. Program testing operates under VM/CMS on a 16 Megabyte IBM 3033U. In addition we have a linked IBM 3032, IBM 8100's, together with laser printing as one of the more recent peripheral facilities.

We need to expand our current staffing of top grade computing professionals with the emphasis on technical expertise in systems development. We are therefore looking for IMS and 8100 systems designers who will have a successful track record in the design, development and implementation of large IMS systems including database design or IBM 8100 applications under DPPX, and who are wishing to develop their career in a really advanced environment.

In addition to large company benefits we are offering first class remuneration packages from £10 to £15K commensurate with the level of expertise and ability we demand from these jobs.

Call Richard Nash on 01-734 9723, or 01-997 2633 evenings and weekends.

TRIUMPH HOUSE, 101 REGENT STREET, LONDON W1R 7WZ

**Database Administrator DL1**

£12,000 London

Regarded as one of the most prestigious retail organisations in the world, our client has a lot to offer. They have embarked on the long term development of a range of commercial and financial systems, and in accordance with their strategy a new post of Database Administrator has been created.

You will be responsible for the design and control of the DL1 databases running under CICS. In addition to controlling, monitoring and tuning database performance and installing new releases of DL1 software and also examining the use of data dictionaries.

Relevant experience is essential (IMS would be considered) and it is likely you will have had experience in a similar role in a CICS environment either in a DB administration or technical support function.

Their DP services are supported by twin IBM 4331-4341 running under DOS/VSE.

Call Hugh Macer on 01-734 9723, or 0908 583147 evenings and weekends.



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Excellent package including high base salary, free furnished accommodation, medical cover, six weeks' holiday, car allowance, flights, etc.

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Materials Management, Finance & Accounting Systems. COBOL and On-line Database experience ideally within an engineering environment.

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Please write, sending curriculum vitae to: Pascale MOUGIN

29 Avenue de Versailles, Le Châteligneraie  
75170 La Celle Saint Cloud, France

(3214)

## Technical Co-ordinator

Our client is a well-established American group offering a complete automated service in systems development and facilities management to corporate organisations over a worldwide data communications network.

We are looking for a Technical Co-ordinator within the areas of hardware maintenance and computer operations to be responsible for this specialised activity in the UK. 2-3 years experience in one or both of these disciplines is necessary. Good communication and administrative skills are essential. Age is immaterial. Location: City of London. Salary c. £13,000.

Applicants, male or female, are requested to write in strict confidence, enclosing c.v., quoting ref. 227, to Douglas Atkins.

AMC Selection

Management and Recruitment Consultants  
15 Borough High Street  
London SE1 9SH  
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## Southend Health Authority SYSTEMS DEVELOPMENT OFFICER

(CASPE RESEARCH)  
(A & C SCALE 4 - £7404 p.a. to £9025 p.a.)

Opportunity for a Development Officer to be responsible for the maintenance and development of the data processing systems, including new programming applications. The team is working on a project to establish clinical budgeting within the Health Authority's existing planning system.

The post would be for a fixed-term period of approximately 18 months although the later possibility of a substantive post with the Health Authority may be considered.

Applicants should have a sound working knowledge of micro-computer systems and application programming.

Application form/job description from District Personnel Department, District Office, Union Lane, Rochford, Essex SS4 1RB. Southend-on-Sea (0702) 546354, Ext 201.

Closing date for completed applications: April 29th, 1983.

(3262)

## BE VALUED IN REAL TIME!

LONDON/SURREY BORDER £28-£10K

Our clients are a small but expanding D.C.-based consultancy with an innovative product range. They currently have a unique opening for a Junior Analyst/Programmer who could contribute further expertise to a multi-disciplinary team and who would be based into a position of greater responsibility.

If you have a healthy aversion to the "big-company" environment then you will value autonomy and the freedom it affords the direction that the consultancy gives. You will also have the opportunity to work on a wide range of microprocessors.

If you have one year+ experience in real time systems, a good academic background and you want the variety, stimulation and the recognition which comes with the responsibility, then, for further details—

CALL MR VINCENT MELLING, ON 01-540 6441 NOW

as posts like this are always filled quickly.

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If you're interested in learning more about the excellent career prospects with companies in the South, particularly along the South Coast, we are manning our telephones this THURSDAY & FRIDAY EVENING between 8pm-9.30pm on

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Phone user: Reverse charge if you wish! WEEKEND ring 0202 284499 9am-5pm and 8pm

Positions range from Micro Computer Sales through Programming to Senior Analysts £8,000-£10,000

CBS APPOINTMENTS

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## THURROCK TECHNICAL COLLEGE

Woodview, Grays, Essex

### LECTURER GRADE I IN COMPUTING

Applications are invited from qualified and experienced teachers who have a good knowledge of at least one computer language, or persons with appropriate qualifications and experience of commercial programming for the above post.

Required as soon as possible.

The appointee will be required to teach mainly on the EEC/TEC Computing Diploma, TOPS Re-training courses and to service other courses in the college.

#### SALARY SCALE:

Lecturer Grade I, Min. £5,956, Max. £9,267 per annum plus £231 London Weighting.

Application form and further particulars may be obtained from the Principal, to whom completed applications should be returned within fourteen days of the appearance of this advertisement.

(3220)

## UNIVERSITY OF EAST ANGLIA Norwich

### LECTURER IN COMPUTING STUDIES

Applications are invited for the post established from 1 October 1983 under the UGC Information Technology Initiative.

Salary on the scale £6,376-£13,505 plus £1000 (Under Review) Plus US\$ Benefits.

Preference will be given to well qualified candidates with strong research interests in the programming language aspects of intelligent Knowledge-Based Systems. The successful candidate will be expected to work closely with Dr Sleep's group concerned with declarative programming and Professor Stoker's data base group.

Applications (three copies) giving names of three referees to whom references may be made should be lodged with Establishment Officer, University of East Anglia, Norwich NR4 7TJ. From 1st June, further particulars may be obtained from the Principal, not later than 14 May 1983. No forms of application are issued.

(3265)

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As Systems Accountant, reporting directly to the Chief Executive Officer, you will also plan the integration of financial systems and pursue the development of the latest EDI techniques within the accounting area.

Preferably in your mid-twenties, you should be educated to degree level and have significant experience of computer based accounting systems, including financial modelling. Personality is equally important - this is not a back room job and the drive and determination to get things done quickly are essential.

As the UK subsidiary of a major international in the energy business and one of the world's largest fertilizer manufacturers, an attractive remuneration package including relocation expenses and the opportunity to study for an accounting qualification is offered.

Applicants, male or female, should write enclosing a full cv to: Alan Aldred, Senior Personnel and Training Officer, Norsk Hydro Fertilizers Limited, Harvest House, Feltonstone, Suffolk IP11 7LP.

## (( NORSK HYDRO FERTILIZERS

### Division of Computing Information Technology

### Principal Lecturer

### Senior Lecturer/Lecturer II

### Lecturer II/Lecturer I

Additional posts are available due to expansion of courses in Information Technology.

Candidates should be graduates (or equivalent) with experience of programming and one or more languages (e.g. PASCAL, COBOL, ASSEMBLER) together with expertise in areas such as Operating Systems, Graphics, Data Processing.

Computing staff teach on a range of Industry linked Higher Options and Foundation Courses and specialist short courses.

Salaries include allowances within the ranges:

Principal Lecturer £12,162-£15,248

Senior Lecturer £10,404-£13,047

Lecturer I £8,064-£10,263

Lecturer II £6,496-£9,498

(Scales under review)

Send SAE for further details and an application form to be returned with two weeks of the date of this advertisement to The Vice Principal, School of Higher Education, Wellington Street, Slough SL1 1YF. (070 282 622)

(3262)

## PROGRAMMER FOR U.K. AND EUROPE

Opportunity to join small professional Computer Consultancy and Software House based in St Albans with possibility for overseas travel, mainly in Scandinavia.

The requirement is for a hardworking COBOL programmer with at least 4 years' DP experience. Knowledge of IBM DOS/IMS essential. Also possible involvement in Micros and Expert Systems.

Excellent prospects for the right person

Write with full C.V. to:

MAGNUM COMPUTER SERVICES LTD.

228 Hatfield Road, St Albans, AL1 4LW

(3262)

## University of Birmingham

### CENTRE FOR COMPUTING AND COMPUTER SCIENCE

## COMPUTER OFFICER

### DATA BASE AND TEXT PROCESSING

Applications are invited from graduates with relevant academic, industrial or research experience for a post of Computer Officer within the User Services Group of the Centre. Candidates must have a sound knowledge of Database technology and a knowledge of text processing techniques would be a strong advantage.

Salary will be on either the Computer Officer IA or Computer Officer IB scale, starting salary in the range of £5,850-£13,505, plus superannuation.

Further particulars from Mrs. J. E. Butler, Senate Registry, P.O. Box 363, Birmingham B15 2TT, to whom applications (3 copies) including full curriculum vitae and naming three referees, should be sent by Friday, May 6th, 1983.

(3220)

## Sen. S/W Engineers

### Berks. £11,000

A small development team working on product implementation in the area of international telex systems is seeking additional experienced software engineers.

Successful applicants will work closely with electronics designers on new products and facilities. They will be involved in the design and development of electronic systems for volume production, together with familiarity with TTL and CMOS components.

Knowledge of a high level language would be a distinct advantage.

Responsibilities will include hardware planning and design, co-ordination with software development teams, testing and commissioning.

Contact Terry Harvey

## Electronics Design Engrs.

### Berks. £9K-£13K

A minimum of 3 years experience in the design of digital logic,

linear circuitry and the development of electronic systems for volume production.

Successful applicants will work closely with electronics designers on new products and facilities.

They will be involved in the design and development of electronic systems for volume production, together with familiarity with TTL and CMOS components.

Knowledge of a high level language would be a distinct advantage.

Responsibilities will include hardware planning and design, co-ordination with software development teams, testing and commissioning.

Contact Brian Coates

## UNIX Programmers

### London £12,000

If your forte is systems software at operating system level and you are seeking to broaden your experience with an attractive company, we would like to hear from you.

Our client is seeking several additional programmers with a range of experience from two years upwards and at least a basic grounding in UNIX. A friendly professional environment.

Contact Terry Harvey

## MANCHESTER JOB OPPORTUNITIES

MANCHESTER may be a rainy-grey town like the one in the Byrds' song but at the commercial centre of Lancashire and the North-West, the area seems to be a flourishing one for the computer industry.

A number of Greater Manchester employees say they have expanded their computer operation despite pressure from the recession.

Surprisingly for a public sector body, the Greater Manchester Passenger Transport Executive has recruited more computer staff recently because, says data processing manager Bill Drynan, the Executive has identified "more beneficial computer projects."

"When we looked at the bottom line," said Drynan slipping into the language of hard commerce, "we saw we had to either spread our projects over a longer period or add more people."

The people option won and the Transport Executive has been recruiting systems designers for several new schemes - a new crew schedule aimed at saving money on manpower, redesigning the management accounting system, and a detailed feasibility study of the whole engineering function.

These are all still in the design stage but at the end of this year the Transport Executive expects to begin recruiting extra programmers to run the new systems.

The Executive, which is the biggest public transport administration after London Transport, prefers to train its existing staff for promotion, rather than recruiting skilled staff from outside.

And DP manager Bill Drynan is full of praise for TOPS programming graduates. "We've found them

# Good bet for the programmer looking for some experience

The Manchester DP industry is healthy despite the slump, says Margaret Park

to be fine," he said. "TOPS courses aren't producing programmers, they can just about spell and write, but they come to us with more than nothing so I'm not knocking the TOPS scheme. The only problem is that TOPS is oversold - they can't claim to be fully fledged programmers."

The Transport Executive has taken a number of TOPS students and has an extensive in-house training scheme.

ICI, the giant chemicals firm for example, hasn't recruited externally for its data processing department

for the past four years.

Angus Coutie, the DP manager, explained that since the order to cut back resounded through the company, all additions to the computer department have arrived by transfer from another part of ICI.

Of course the other side of the recruitment coin in the Manchester area, and in any other part of the UK, is that certain industries are suffering to a greater extent from the recession.

Barry Hobson, director of this division of Hoskyns said it is expanding and the company is almost always on the look out for a

whole range of skills. Hoskyns does work for different clients on different hardware, so programmers and analysts with experience on kit from the major suppliers - IBM, ICL, DEC, Hewlett-Packard and so on, are in demand.

Centre-file, another bureau, this time in Manchester's Trafford Park, has also expanded. But because of a slow staff turnover, the bureau fast reached the number of staff needed.

"We've reached the right level over the last month," said the DP manager Peter Cariss. "We have been growing but have plateaued out because we've never had a high turnover of staff."

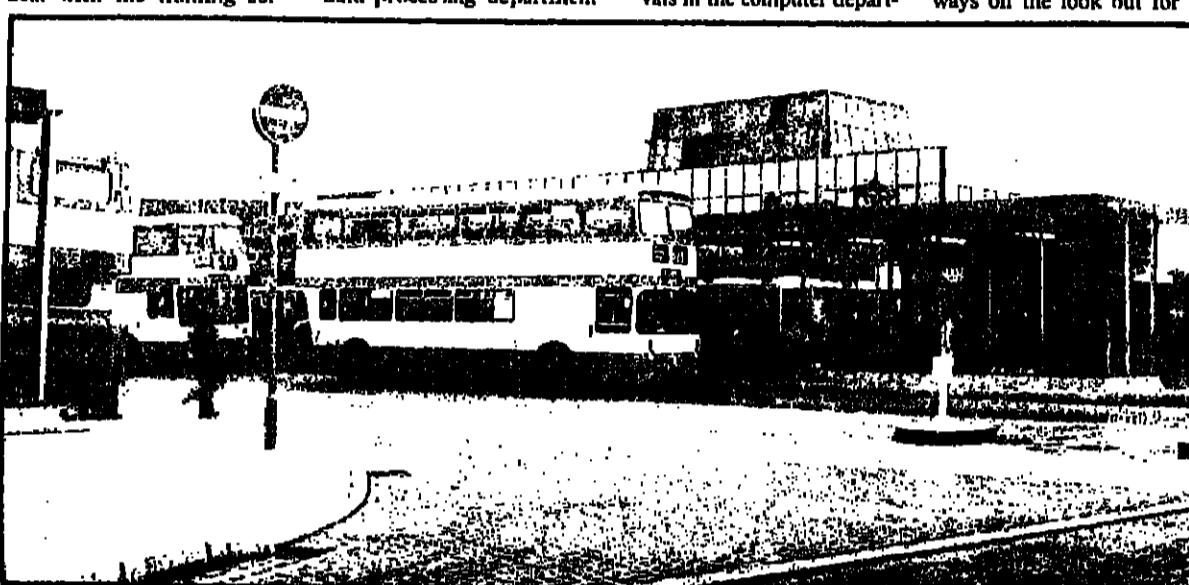
Centre-file is an example of a nationwide employment trend. Growing unemployment has meant that in the last couple of years, staff have hung on to their jobs. Once in a secure job with an established firm which looks unlikely to go bust in the next fortnight, employees tend to dig in their heels and settle down.

And even computer staff, once known for their ability to flit from job to job attracted by competitive salaries, have been affected.

"Our only turnover in the last two or three years," said Cariss, "has been a result of either maternity leave or retirement."

"Operations is a good grounding for programming," said Cariss.

The Corporation occasionally takes experienced staff - it has needed them recently because of a long overdue changeover from the DOS operating system to IBM's newer MVS.



Surprisingly for a public body, the Greater Manchester Passenger Transport Executive has recently recruited more computer staff.

## Ferranti Computer Systems Ltd.

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We also have a limited number of openings for experienced specialists in . . . IMAGE ENHANCEMENT, SIGNAL PROCESSING, and UNDERWATER ACOUSTICS . . . these positions could command higher salaries. Ref: FY.3.

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For an informal discussion about the career opportunities . . . the jobs and salaries . . . please telephone Colin Roberts, Career Development Manager on 061-428 0771, or write for further information/application forms to:

The Personnel Department,  
Ferranti Computer Systems Limited,  
Bird Hall Lane, Cheadle Heath,  
Stockport SK3 0XZ.

**FERRANTI**  
Selling technology

"In three years," he added, "only three people have left us for alternate employment and two of those were lured to the US."

Centre-file does a lot of business in the installation of turnkey systems and also reports complete satisfaction with TOPS graduates.

"We've taken about twelve so far, trained on IBM and ICL kit," said Cariss.

But according to Cariss, Centre-file has had a harder time attracting experienced staff to Greater Manchester.

"We've been looking for people experienced in IBM's MVS operating system," Cariss said, "but we didn't get a lot of applicants even though we advertised."

The field where computing jobs are more easily found is computer services. Hoskyns' systems division in the Manchester suburb of Sale has been expanding steadily.

Barry Hobson, director of this division of Hoskyns said it is expanding and the company is almost always on the look out for a

whole range of skills. Hoskyns does work for different clients on different hardware, so programmers and analysts with experience on kit from the major suppliers - IBM, ICL, DEC, Hewlett-Packard and so on, are in demand.

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"Operations is a good grounding for programming," said Cariss.

The Corporation occasionally takes experienced staff - it has needed them recently because of a long overdue changeover from the DOS operating system to IBM's newer MVS.

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POP 11 RXS CORAL					

## PERMANENT

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Company with high standards and lots of development work require ICL COBOL Programmer with working knowledge of VME. Urgent requirements so ring today.		

SENIOR PROGRAMMERS	Manchester	£10,000
Stable, energetic people required with extensive IBM COBOL. Knowledge of IDMS or IMS particularly advantageous for certain installations.		

SYSTEMS ANALYSTS	Manchester	£8,000
Self-motivated people with COBOL programming background and knowledge of ICL and/or mini equipment to support a sales team, advise clients and take projects through from feasibility to implementation.		

PROGRAMMERS	Liverpool/Lancs	£9,000
PL/I and/or COBOL expertise wanted for interesting, secure posts. Position also available for Team Leader with the above qualities, plus analysis skills. Salary dependent on experience but very		

SYSTEMS ANALYST	South Manchester	£8,500
Major company is currently seeking a business oriented Analyst able to stand on own feet and develop systems in a database and on-line environment.		

SENIOR PROGRAMMERS	Manchester	£8,000
Minimum 2 years' ICL COBOL to work in on-line commercial environment, prospects into analysis if required.		

ANALYST PROGRAMMER	Merseyside	£9,000
Existing opportunity for Analyst/Programmer with at least 2 years' ICL COBOL and preferably some knowledge of DME to join company during a conversion period and become familiar with a new machine. On-line and accounting systems experience would be a distinct advantage.		

MANAGER	Manchester	£8,500
Manager required for a new programme looking for an opportunity to get experienced.		

Knight	No. 1	£10,000
London Manchester Birmingham Holland U.S.A.	INTERNATIONAL COMPUTER CONSULTANTS Adamson House, Market Place, Shambles Square, Manchester.	(318)

Programming Support Limited		

UMIST	RESEARCH ASSISTANTS	
Applications are invited from computer scientists with a theoretical grounding in computer science for Research Assistants to work on the SERC funded project "Software Verified Software". The post appointed will develop an implementation of the algebraic specification language Z. The post holder will proof check in Pascal on the group's PDP-11 Cambridge Ring computer system. Knowledge of the following areas would be an advantage: program verification, functional programming, logic, system software. The appointments will be for three years.		

Salaries will be according to age and experience in the range £8500-£11100 per annum.		
Further information can be obtained from Robin Gillmor (ext. 201) or David G. Smith (ext. 2341) on 061-226 3211, or write to the address below. Applications should be sent as soon as possible. Please quote reference COM/32/2.		

Computer	Communication	Protocols

48 COMPUTER WEEKLY April 14 1983

**MANCHESTER JOB OPPORTUNITIES**

**56** Bolton/Bury Computer Unit 

**POST A: SENIOR ANALYST/PROGRAMMER**  
(Salary to £10,071 per annum)

**POST B: PROGRAMMER**  
(Salary to £8,325 per annum)

The joint computer unit of Bolton and Bury Metropolitan Councils invite applications from experienced persons for the above positions.

Successful applicants will join one of several project teams at the beginning of an exciting period of development. We are seeking technically qualified personnel who will have several years' COBOL experience, ideally for post A, systems design experience and a demonstrable maturity of approach will be added advantages.

Hardware will be based on ICL 2986 mainframes, using DME GEORGE 3/CIME/VM 2900 operating systems and a considerable expansion of distributed computing, via networking facilities, is envisaged.

Application forms, which are available from the Personnel Officer, Town Hall, Bolton BL1 1RU (Tel: 22311 Extns. 887 & 6105) should be returned by 28th April 1983. Trade Union Membership is a condition of service.

An Equal Opportunity Employer

(2263)

## Project Leader West Yorkshire c£10,000

We are a major manufacturer operating in a VM/DOS/VSE COBOL environment, making extensive use of DL/I and UFC. Our teams are being reorganized for an exciting integrated international project involving adaptation of comprehensive mini and mainframe computer systems developed by our US parent company.

As a result of this reorganization we need an additional Project Leader. Initially your team will maintain and enhance batch and on-line systems developed in the last five years.

You will currently be a Project Leader or Senior Programmer who can show technical competence in the above environment and the ability to give effective control and direction to four Analyst/Programmers.

We are also looking for a Senior Analyst/Programmer with a similar technical background. Salary will be commensurate with experience.

Relocation assistance available, if necessary, for the right candidates.

For more information or a brief telephone interview ring Larry Page on 0494 22413, preferably Thursday, Friday or Saturday between 8 and 11 p.m., or write to us at Box Number 1285.

(2208)

Wrexham Major Borough Council

## MANAGER Wrexham Information Technology Centre

SALARY CIRCA £11,000

The Wrexham Major Borough Council, together with a group of local industrialists, is establishing an Information Technology Centre, part of an industrial development programme on the Wrexham Industrial Estate. The Centre will provide training in the first instance for 30 young people in Industrial microelectronics, computing and electronic office skills. The development of marketable services and products is to be encouraged and as part of the Authority's function, the Centre's managers are envisaged that some of the persons trained will develop their new skills to establish their own business. Accordingly, there will be a strong link between local industry and the Centre. A Manager with relevant experience and qualifications is required to establish the Centre as an important facility for expanding the use of microcomputers in the community and providing skilled personnel for the business sector.

Assistance with temporary housing, accommodation and reimbursement of removal expenses will be considered in appropriate cases. Initial three year contract.

Applications, which should be a comprehensive C.V., should be addressed to Personnel Officer, Wrexham Major Borough Council, Gwylfael, Wrexham LL11 1AY, Tel. No. Wrexham 384611, Ext. 46.

Closing date: Wednesday 26 April, 1983.

PER WREXHAM TEL. 384611

(2208)

Executive Selection.

## SYSTEMS AND PROGRAMMING

### COBOL/CICS

**LONDON** To £9,500  
Central London based insurance company housing IBM 4341s with DOS/VSE, COBOL and CICS requires a keen, enthusiastic programmer (preferably a graduate) with 12 months + COBOL/CICS experience to join their dynamic development team, working on a range of financial applications. They offer excellent benefits including subsidised mortgage, free lunches and flexi-time.  
Ref. C2368

### DEC MUMPS

**LONDON** To £11,500  
Senior position with this City-based company for an analyst/programmer with around 4 years' DP experience, at least 2 years' analysis, and experience of DEC MUMPS. You will be offered every chance to move into management, and work with a variety of machines in a stimulating environment.  
Ref. C2129

### BURROUGHS - COBOL

**To £10,500**  
My clients, a major and successful software house, are currently seeking programmers and analyst/programmers with Burroughs mainframe expertise and a bias toward commercial applications. You will be involved in development work of a very high standard, and be encouraged to advance into systems and program design. Based in Herts, the department is large yet the teams within it are close knit, and professional. Phone now for more details.  
Ref. A 1920

### UNIVAC - COBOL

**To £10,000**  
My clients offer the chance for experienced UNIVAC 1100 programming staff to join an expanding organisation where their ability to develop advanced business systems will be rewarded. You will be trained in both database and insurance applications, whilst working in a real-time on-line environment, sited in the heart of Kent. Opportunities for progression are solid, and benefits include flexi-time, sports and social club and mortgage subsidy where appropriate.  
Ref. A 1924

### BUSINESS BASIC

**CENTRAL LONDON** £9,000 neg.  
With a minimum of 6 months' Business Basic experience on Data General equipment you could be joining this busy computer bureau serving a wide range of clients. Working as part of a small team, you will be expected to deal with users, develop and finally implement various systems. Ideal opportunity for an ambitious programmer to train in analysis.  
Ref. D 2319

### IBM SYSTEM 38

**To £10,000**  
Would you like to work for a small DP department that offers you plenty of scope, variety and prospects? A dynamic commercial organisation based in N/W London are seeking an IBM System 38/PGP III programmer, with the potential to move into analysis. They have just recently installed the IBM System 38 and will shortly be embarking on exciting new development projects.  
Ref. G 2248

### IBM ANALYST/PROGRAMMER

**£10,000 + PERKS**  
A well-established financial concern have an urgent requirement for a competent analyst/programmer to take up a vital position within their DP department. You should have a minimum of 18 months' IBM COBOL or ASSEMBLER experience with exposure to either DL/I or CICS. If you have the ability to respond to a challenging environment and seek a rewarding career please ring for further details.  
Ref. G 2103

### COBOL

**CENTRAL LONDON** £9,500-£10,500 neg.  
Major electrical concern based in Central London wishes to meet competent analyst/programmers with Data General COBOL expertise. You will be working as part of a small team who are responsible for designing, developing, maintaining and implementing programs. You should have a positive attitude to work and the ability to work unsupervised.  
Ref. D 2324

### APPLICATIONS SUPPORT PROGRAMMER

**To £11,000**  
A well-established bureau based in the City has a requirement for an Applications Support Programmer, to support and maintain a variety of projects. The ideal candidate should have an IBM ASSEMBLER background with DOS/VSE, some CICS would be helpful, although training given where necessary. The position offers good prospects with the possibility to move into systems programming at a later date. Please ring for more details.  
Ref. G 2349

### IBM COBOL

**BERKS** To £9,000  
Variety of interesting positions in the Berkshire area for programmers with at least 12 months' IBM COBOL experience gained within an MVS, DOS/VSE, or VM environment. Opportunity to gain on-line and database experience and further your career.  
Ref. C 4306

### HONEYWELL - COBOL

**To £10,500**  
Berkshire-based manufacturing concern, housing both Honeywell level 66 and level 6, would like to meet programmers with a minimum of 12 months relevant experience. Your involvement would be mainly in a development capacity, dealing with applications such as distribution and inventory control, payroll etc. This is an ideal opportunity for a young programmer to further his career and knowledge as many training courses are organized. Promotion prospects and remuneration is excellent.  
Ref. A 1709

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**LONDON/HOME COUNTIES** £7-£11,000  
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Ref. GEN 42

### IBM COBOL

**WEST LONDON** £10,000  
Exciting position with this major world-wide company running IBM 3341 with DOS/VSE, CICS and DL/I. They seek a capable programmer with 2 years' IBM COBOL and preferably some CICS and/or DL/I experience although full training will be provided for an outstanding applicant. Plenty of development work in a friendly team environment.  
Ref. C 2342

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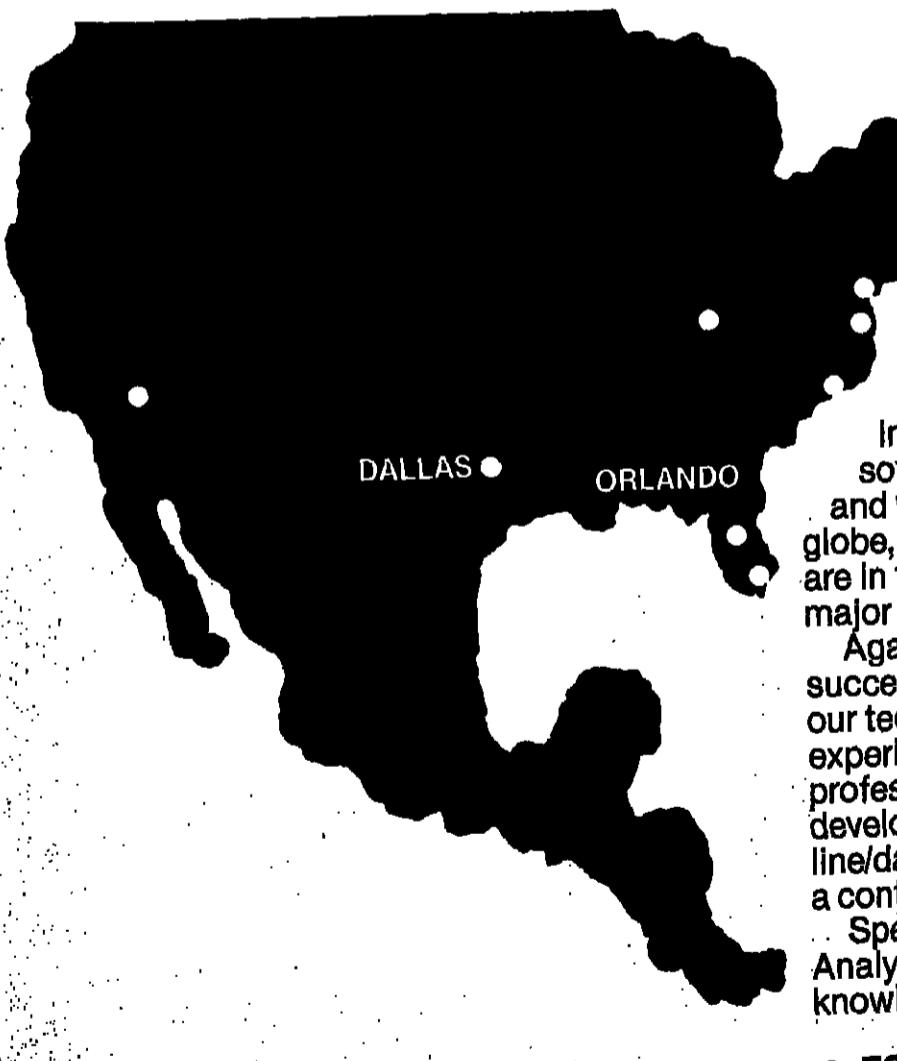
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(2208)

## FOCUS-RAMIS-IMS-PL/1

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However, whatever your skills, if you have a minimum of 2 years' recent IBM experience, we'd like to hear from you.

Based in Florida and Texas, these assignments offer exciting opportunities to both broaden your experience and to enjoy the challenging rewards of the USA.

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Programming, Systems Analysis and Data Processing within a commercial environment and good communication ability, would be needed. Arabic knowledge is essential.

Also needed two Programmer/Analysts with three years' minimum experience for the same project. Arabic knowledge is not essential.

Salary will be negotiable depending on experience and background and will include accommodation and a car.

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(3280)

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**Software Systems Designers** able to develop the detailed software design concepts and lead technically a team of implementation programmers.

**Programmers** wishing to develop their existing programming abilities and level of design responsibility.

Software is developed using a Host-Target approach. The host computers are DEC PDP11 and VAX machines, supporting INTEL 8086 and TI 9900 microprocessors. Languages used are CORAL 66, PASCAL and ASSEMBLER, which are normally used in conjunction with a highly developed MASCOT design and implementation methodology.

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(3230)

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£9,256-£9,828 p.a.

Ealing is a member of a Joint Computer Consortium, which operates a large IBM Mainframe, services approximately 200 terminals, and is rapidly developing personal and minicomputer facilities using VME. Due to the nature of the previous post holder, no new applications for the post of Computer Auditor. The responsibilities of the post include reviewing new and existing computerised systems (Mainframe, Mini and Micro), developing audit software and interrogation facilities, carrying out computer centre audit and providing technical advice and assistance to other audit staff.

Applicants should have experience in data processing or computer auditing.

Please quote reference: 0344 FD. Closing date: 29.4.83.

Application forms from Personnel Office, Room A202, Town Hall Annex, New Broadway, Ealing, London W5. Telephone: 01-573 2424 extension 3350. Out of hours service on 01-840 1000.

(3231)

PIONEERS IN TECHNOLOGY

As London based European distributors of a unique micro-based conversion system, we need energetic, responsible staff to expand our products and services in the UK and Europe.

**SYSTEMS ENGINEER/MANAGER**

We are looking for an engineer experienced in micro-computers operating under CP/M to set up and run the installation and maintenance division of our company. Knowledge is essential in communications on computerised systems, preferably with micros and phototypesetters. £10,000 plus computer package.

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We are looking for an experienced sales person to set up a separate London sales division with responsibility for the sale of the range of systems, preferably word processors and phototypesetters. The job is challenging and demanding and the successful applicant will enjoy a substantial income package plus company car and other incentives.

Applications in writing to Box No. 1296, o/a Computer Weekly, etc.

(3232)

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Post Ref ES 10 001/2

£8,973-£10,071

Two science or engineering graduates are required to support the computer group's aims of providing cost-effective processing and two DEC VAX 11/780 computers and an IBM 3031.

A thorough knowledge of Fortran is essential and experience of computer graphics, interactive programming, and software evaluation would be invaluable.

Mr. D. Quest will answer queries on Wakefield 367111 ext. 2518.

Application forms and further details from Directorate of Traffic, Highways and Engineering, Room 228, County Hall, Wakefield WF1 2QW.

Closing date: April 28th, 1983.

(3233)

Senior Technical Support Engineer

If you have a thorough working knowledge of the IBM OS operating system and are familiar with the following Computer Associates International Inc. products (ex-Capex Corporation)

CA - Scheduler, CA - TLMS/II, CA - Manage

DASD, CA - EZTEST and CA - JOBDOC - then we would like to hear from you.

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Closing date: April 28th, 1983.

(3234)

GATEWAY BUILDING SOCIETY

OPERATIONS SUPPORT TECHNICIAN

£12,750

The Society operates a dual-processor configuration supporting a comprehensive terminal network. All the Society's 138 terminals are on-line to an IBM mainframe, using IBM 360 terminal equipment.

An opportunity now exists for a suitably qualified person to be appointed as an Operations Support Technician to report to the Computer Operations Manager. The principal responsibility will be the maintenance and troubleshooting of operational libraries and Job Control. This is a new appointment which will enable the successful applicant to have considerable influence over the procedures and methods of operation that must be established.

Applicants must have two to three years' experience of operating IBM mainframes in a VM/DOS environment and a working knowledge of DOS/VSE job control is desirable. A competitive salary and benefits package is offered, including preferential mortgage terms.

The Society's modern Admin. Centre is located in Worthing and offers excellent working conditions and amenities, including swimming, squash and tennis.

Please send personal and career details, in confidence, to The Personnel Manager, Gateway Building Society, Gateway House, Durrington Lane, Worthing, West Sussex BN13 2OD.

Applications should be received not later than 25th April 1983.

(3235)

COMPUTER AUDIT

£7,791-£9,231 p.a.

An opportunity exists in the Borough Treasurer's department for a Senior Auditor to play a leading role in developing Computer Audit techniques, all major financial

Systems are computerised with increasing use of on-line terminals and further substantial computer developments are planned after the council's existing computer is replaced later this year.

The successful applicant will have either a financial or computer background, and the appropriate qualifications would be an advantage although Specialist training will be provided. Enthusiasm and the ability to communicate effectively at all levels are essential.

The post holder will also be required to become involved in other aspects of a progressive and very active audit section. Excellent conditions of service include flexible working hours, staff canteen and bar, full removal expenses and other relevant expenses in line with the council's scheme.

Applicants must have two to three years' experience of

operating IBM mainframes in a VM/DOS environment and a working knowledge of DOS/VSE job control is desirable. A competitive salary and benefits package is offered, including preferential mortgage terms.

The Society's modern Admin. Centre is located in Worthing and offers excellent working conditions and amenities, including swimming, squash and tennis.

Please send personal and career details, in confidence, to The Personnel Manager, Gateway Building Society, Gateway House, Durrington Lane, Worthing, West Sussex BN13 2OD.

Applications should be received not later than 25th April 1983.

(3236)

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(£8,000 to £10,000).

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- Operating system design
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Exciting opportunities now exist to join the design and development team of an expanding Unix computer manufacturer.

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(3239)

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Belgium £25-29K

VAX, PL/I Programmers  
minimum four years' experience  
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Please contact in the first instance, Sally Lawrence,  
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Required to teach Computer Studies to students on the SNC in computer data processing. Professional qualification and extensive experience of high level languages (particularly COBOL) essential.  
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OR SOME EXPERIENCE OF  
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Experience in office automation systems would be an added advantage.  
Rates are high - up to £20 PER HOUR PLUS FOOD & LODGING, ETC  
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Should you have any of the skills listed below we want to hear from you.  
These are LONG TERM contracts (initially 1 year+) for SYSTEMS DESIGNERS/PROJECT LEADERS with some of the following skills:  
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Application forms available from the Personnel and Management Services Office, Council Offices, Sandwick Road, Stornoway (0865) 3773, ext. 356. Closing date: Friday, April 29, 1983.

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We wish to recruit for our South-East sales office in Wembley, the following personnel:

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To sell Televideo and DEC LSI systems to OEMs, systems houses and educational establishments. A working knowledge of CPM or LSI systems would be relevant. On-target earnings would be respectively £21,000 and £16,000. However, the targets are realistic (we already have a healthy turnover in the South-East) and expected earnings would be in excess of these figures.

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Applications to: Valerie Brown, Personnel Office, Data Type Limited, Llantramm House, Llantramm Industrial Park, Cwmbran, Gwent NP44 3YP. Tel: 09333 69162.

(3273)



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Co-ordination of user services for staff, students and administration, including information, documentation and program advisory services, combined with involvement in current programming projects. Hardware currently includes 4 large PRIME computers and 45+ CPM/1 micros.

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Further particulars and application form from:  
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(3148)

UNIVERSITY OF  
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**Programmer**

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Requiring a highly successful track record with one of the major small business system manufacturers or dealers, your sales experience must be augmented by a fair understanding of accounting systems, stock control or similar applications. The role will involve the sourcing, selection and account management of regional distributors and software/systems houses throughout the UK. A sound knowledge of at least one vertical market would be advantageous.

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With at least five years experience in the computer industry, your experience must cover operating systems (Unix preferred) and applications software. You will use this expertise fully in liaison with software houses and customers for the provision of a high level of pre-sales technical support.

Experience of training sales engineers would be useful.

For full details of this exciting new venture please telephone Ken Allwright on Maidenhead (0628) 74274 or write in confidence to Charvil Lewis International, 27 Merlow Road, Maldenhead, Berkshire.

It is intended that these appointments should be held in conjunction with a college fellowship.

Further particulars of the university lecturerships, and of relevant college posts, may be obtained from: Professor G. A. R. Horne, F.R.S., Oxford University, Department of Computing Science, University of Oxford, 24-29 St. Giles, Oxford OX1 3GD. Telephone Oxford (0865) 24161. Applications (2 typed copies, or one from overseas applicants) should be sent, (Separate application is not necessary for an associated college post). The closing date for the receipt of applications is 11th May, 1983.

(3227)

**UNIVERSITY OF OXFORD****UNIVERSITY LECTURERSHIPS IN COMPUTATION**

Applications are invited for four University Lecturerships in Computation, tenable from 1st October, 1983. These appointments will be made under the University Grants Committee's scheme for financing a number of additional Information Technology posts in universities.

It is intended that these appointments should be held in conjunction with a college fellowship.

Further particulars of the university lecturerships, and of relevant college posts, may be obtained from: Professor G. A. R. Horne, F.R.S., Oxford University, Department of Computing Science, University of Oxford, 24-29 St. Giles, Oxford OX1 3GD. Telephone Oxford (0865) 24161. Applications (2 typed copies, or one from overseas applicants) should be sent, (Separate application is not necessary for an associated college post). The closing date for the receipt of applications is 11th May, 1983.

(3227)

**THE KELVIN LABORATORY  
UNIVERSITY OF GLASGOW****COMPUTER SYSTEMS ENGINEER**

The Laboratory has a vacancy for a person to work with the production on-line data processing system both in the Laboratory and for experiments carried out at foreign laboratories. The work is varied and interesting, involving both hardware design and programming of the on-line computers, which at present comprise several DEC 11/23 systems. It will also be required to act as a person appointed to become familiar with the VAX 11/780 in the laboratory. Experience of one or more of these systems would, of course, be an advantage.

Applications will be welcome from candidates without such experience but demonstrating adaptability and willingness to learn.

Salary will be on either Range 1A (£6,778-£9,940), or Range 1B (£8,562-£12,008) on the scales for Research and Analogous staff, depending on qualifications and experience. Superannuation under the USS Scheme is also provided. The post is funded by the SERC on a "rolling grant".

Applications, detailing qualifications and experience (three referees should be sent to Professor J. M. Reid, The Kelvin Laboratory, Department of Natural Philosophy, University of Glasgow, Glasgow G12 8QQ, by 20th April 1983 to whom further enquiries should be addressed. In reply please quote Ref. No. 4822).

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Applications are invited for a post of Lecturer in Information Systems/Business Computers in the School of Industrial and Business Studies.

The successful candidate will teach on undergraduate and post-

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ern computer developments relating to information and

experience as well as an understanding of the problems of

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up to £9,110 p.a. on the Lecturer scale: £9,374-£12,000.

Applications and further particulars may be obtained from the Academic Registrar, University of Warwick, Inst Adm/181CWU, University Road, Coventry CV4 7AL. Closing date for receipt of applications is 1st April 1983.

(3149)

**UNIVERSITY OF ESSEX  
Department of Electrical Engineering Science  
Lecturer in Software  
Validation/Specification related  
to Real-Time Systems**

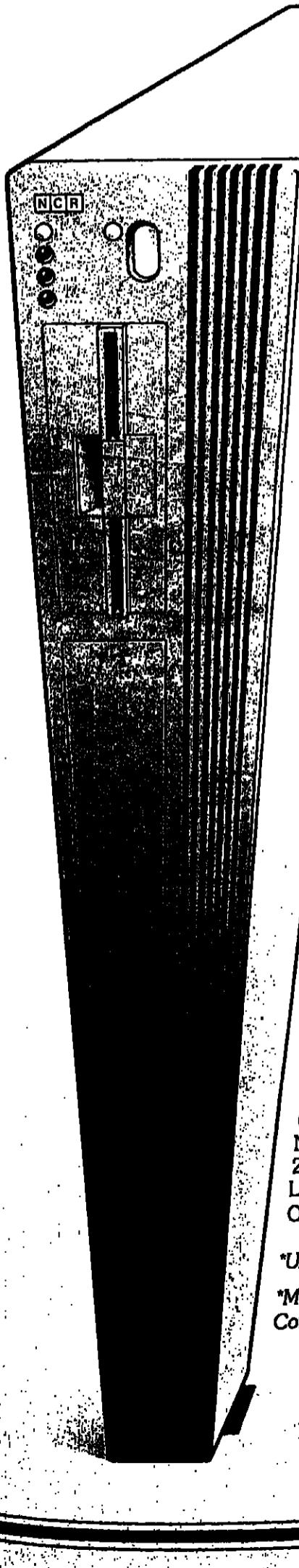
Applications are invited for the above post (Salary scale £9,374-£12,000) for September 1983. An MSc degree in Telematics. This course which is also offered as other graduate courses in the Department has recently been recognised by the SERC for Information Technology conversion.

Successful applicants will be required to teach on undergraduate courses in the field of real-time systems and specification related to the graduate Telematics course and to the undergraduate courses in Telematics and research in the Department. Both teaching and research in the Department are extensively supported by British Telecom.

Further particulars may be obtained from the Registrar, Inst Adm/181CWU, University Road, Coventry CV4 7AL. Closing date for receipt of applications is 1st April 1983.

(3150)

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NCR are about to launch a revolutionary new mini.  
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And the NCR enhanced operating system is derived from UNIX - the emerging world standard for 16 bit machines.

Now we're seeking the sales people who can ensure its success.

You'll need to have a successful track record in mini-sales dealing with major companies in commerce and industry.

And you'll need to prove that you possess the dynamic abilities needed to capitalise on these unique opportunities.

We have a well founded reputation for combining traditional strengths in sales, service, manufacturing and support engineering with an innovative application of advanced hardware and software technology.

And the result is The Tower - a leading edge system in advance of its competitors, incorporating the following benefits:-

- An NCR enhanced operating system derived from UNIX\*

- 10 MHz MCC68000

- The latest high performance fast access Winchesters

- Multibus\* for industry standard interfaces

- Separate high speed memory bus

Now, perhaps, you can understand our confidence. If you share it, then join us in London, Birmingham, or Leeds and enjoy the salary, company car and benefits you'd expect from a project that is riding high.

Please write giving full career details to:

Keith Lander,  
CIMEG Sales Director,  
NCR Limited,  
206 Marylebone Road,  
London NW1 6LY.

Or telephone 01-388 8159 for an application form.

Or telephone 01-388 8159 for an application form.

\*UNIX is a registered trademark of Bell Laboratories.

\*Multibus is a registered trademark of Intel Corporation.

# NCR

Complete computer systems

**SALES BIT**

Quality of management - 48

# Establish good relations

WHATEVER your feelings about recruitment agencies, it is very difficult to avoid using them if you are to solve your recruitment problems within an environment that has as many as 10 jobs chasing every competent salesperson.

When using an agency tell them absolutely everything about the job, the company, the product, the people and the market. To hide facts about problems or opportunities, be they in the present or future, is likely to cause the agency to undercut or overtake you.

Putting forward ideal conditions is easy and a great joy to any recruitment consultant; obviously everybody wants them.

It takes all of five nanoseconds to get them into gainful employment. The only problem is, such people are not common and, not typically hanging around on agency files.

The recession has flushed out many passengers and non-performers. Some inevitably end up on agency files particularly within generalised agencies without the specialist experience to identify them. There are also many candidates without appropriate skills and experience trying to get into computers; while such applicants emanate from the

national Press advertising, some get on to agency files.

This could be a source of good people, but is best avoided if the potential employer has no training facilities or commitment to develop new recruits. Having said that, good candidates with justifiable reasons for changing employment regularly approach recruitment consultants in order to find a new job.

It is therefore important to establish a good relationship with such specialists.

This leads to a better understanding on the part of the consultancy about the company, its products, style, type of salesman, etc., that is likely to fit the company mould.

**PUZZLE ANSWER**

BRIEF mental examination of the series 1 4 9 16 25 gives the vital clue - i.e. that the "difference" increases by two each time. So the next highest square after 219024 must be 219961 (219024 plus the difference between the two original squares given - 935 - plus 2).

**LINK ASSOCIATES  
is an****IBM SOFTWARE HOUSE**

We specialise in developing bespoke systems on IBM mainframes. We are looking for more Programmers, Senior Programmers and Analyst/Programmers with at least 3 years' experience of this environment.

We can offer: Lucrative Career Opportunities  
Quality Work with Reputable Clients  
Variety and Training  
Salaries to £13,000 p.a. plus Expenses  
Quarterly Increases

If you have: COBOL or PL/I with at least one of the following:  
IMS DB, ADABAS, IDMS  
IMS DC, SHADOW, CICS

If you live within a 40-mile radius of Central London and are interested in joining a growing Software House

Please contact: Sheila Fox  
Link Associates Limited  
24a High Street, Chesham, Bucks. (0494) 784922

Jeff 12/13

## SYSTEMS AND PROGRAMMING

### IBM COBOL PROGRAMMER

**CITY** £11,000  
This major foreign bank wish to engage an experienced IBM Cobol Programmer. This person will work on IBM 4341 hardware. Preference will be given to candidates who can display expertise in CICS and DL/1. All major banking benefits are available. S.6839

### PL/1 ANALYST/PROGRAMMERS

**BERKSHIRE** £10-£15,000  
This prestigious company have vacancies for people with two to three years' PL/1 experience. They retain IBM hardware and offer a range of varied and impressive benefits. These include N.C. Pension, bonus schemes, company discount, etc. S.187

### TECHNICAL REPRESENTATIVE

**HERTS** £20,000+  
Expanding organisation situated close to London has a vacancy for someone with the following experience: Assembler, in-depth knowledge of MVS, CICS, IMS, CLIST, TSO tuning and performance analysis experience. This is an ideal ground floor opportunity. S.7225

### IBM TEAM LEADER

**LONDON** £12,000  
This well established and world renowned business urgently require a Programming Team Leader. Four to five years' Cobol, two years' CICS and some supervisory experience will suffice. Benefits include subsidised restaurant, S.T. Loan, etc. S.7226

### WANG COBOL PROGRAMMER

**CITY** £10,000  
A subsidiary of a major bank wish to engage a Cobol Programmer for development work. Applicants should be graduates in their mid twenties with two years' commercial experience. Preference will be shown to candidates with large scale mini experience. X.8662

### FORTRAN ANALYST/PROGRAMMERS

**SURREY** £10,000  
Situated in a pleasant part of Surrey this world famous company are currently seeking to recruit a number of experienced Fortran Analyst/Programmers. Preference will be given to candidates with a relevant degree and an excess of two years' commercial experience. X.7048

### IBM SNR ANALYST/PROGRAMMERS

**C. LONDON** £NEG.  
A financial institution in Central London wish to recruit two Senior Analyst/Programmers. Successful candidates will have five years' IBM Cobol coupled with two years' analysis experience. The company retains IBM 4341 hardware and offers a package including subsidised mortgage. S.7186

### DEC PDP ANALYST

**ESSEX** £10,000+  
A publishing company located in rural Essex wish to increase their DP staff by engaging an experienced Analyst. Good applications experience and a varied knowledge of commercial applications are required for this position. Subsidised lunches and Non Contributory Pension are part of the extensive package. X.7122

### T.I. COBOL PROGRAMMER

**CITY** £NEG.  
This famous financial company require an experienced T.I. Cobol programmer. Applicants must have a stable work record and be able to communicate with users. Benefits include profit sharing, S.T. Loan and L.V.s. X.8608

### SYSTEMS ANALYST

**LONDON** £12,000  
Well established software house require a Systems Analyst to work on various projects relating to a mini computer environment. Financial experience an asset but not essential. Candidates must be able to investigate and produce a feasibility study. X.7048

### TANDEM PROGRAMMER

**LONDON** £10,000  
City organisation wish to recruit an experienced TANDEM programmer to work on financial applications. The position carries considerable benefits and a competitive salary is offered to the right individual. G.7112

### BURROUGHS PROGRAMMER

**LONDON** £8,000-£9,000  
Prestigious West End organisation is seeking experienced Burroughs people with a good knowledge of DMSII. Excellent company benefits include BUPA, Interest Free Season Ticket Loan and Contributory Pension. G.7162

### NCR ANALYST PROGRAMMER

**S.W. LONDON** TO £13,000  
A leading commercial bureau is looking for an individual with three years plus NCR IMOS III experience. A good knowledge of payroll and accounting applications is of prime importance. G.7083

### UNIVAC PROGRAMMER

**BUCKS.** £9,000  
Aylesbury based organisation seek to fill a demanding position. The right individual will possess at least two years' Univac 1100 experience with sound knowledge of DPS and TIP. G.7063

### ICL SYSTEMS ANALYST

**W. LONDON** TO £11,000  
Well known company are seeking an experienced Systems Analyst to take a major role within the organisation. Knowledge of payroll, personnel and accounting systems would be a distinct advantage. G.7228

FOR FURTHER INFORMATION, PLEASE TELEPHONE 01-439 7871

## CONTRACTS

### IBM

SWIFT  
Cobol, DOS/VSE, CICS  
System 38, RPG III  
Any GSD + Insurance  
Cobol, OS/VSI, CICS  
PL/I, IMS, DB/DC  
System 34 + 38  
Cobol + Any Online  
IMS DB/DC  
Cobol, CICS, DL/1  
IMS/MVS

ICL  
ME28, Cobol, IDMS  
VME 2900, Cobol, IDMSX SCL  
VME/B, Cobol, IDMS  
DRS, CIS Cobol/Assembler

| Analyst/Consultants    | London  | London  | Various |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Analyst/Programmers    | London  |
| Analysts               | Various |
| Analyst/Programmers    | Various |
| Analyst/Programmer     | Various |
| Programmer             | West    |
| Designer/Administrator | West    |
| Team Leader            | London  |
| Systems Programmer     | Surry   |

FOR FURTHER INFORMATION PLEASE PHONE 01-439 1856

## OPERATIONS

### SHIFT LEADER

**BERKSHIRE** £7,200  
The ideal candidate for this challenging position will have at least two years' experience of I.P. 3000 additionally some knowledge of ICL GII or GIII, although the latter is not essential. This is a demanding role requiring an intelligent and self-motivated individual. J.7030

### IBM OPERATORS

**BERKSHIRE** £ NEG.  
A major financial organisation situated in Berkshire require an IBM 4331 operator with a minimum of one year's experience of CICS, although applicants with MVS will be considered. Varied benefits are available and the company operate a progressive shift pattern. J.7187

### ICL OPERATOR

**BERKSHIRE** £6,250  
A subsidiary of a large organisation requires an operator with two years' experience of CICS+ and ideally some knowledge of ME28 series. Applicants must be capable of working alone and largely unsupervised. J.7209

### DEC PDP OPERATOR

**SURREY** £6,700  
A large installation requires a Senior Operator with a good experience of PDP 11/70 equipment. Although a mainframe system is in operation applicants should ideally possess their own transport. J.7209

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